LOYOLA UNIVERSITY CHICAGO 1870 AD MAJOREM DEI GLORIAM
eCOMMONS

Loyola University Chicago
Loyola eCommons

Dissertations | Theses and Dissertations

1974

A Comparison of Two Approaches to One-Exposure Inservice Workshops Based on Questioning in Classrooms

Sydell Weiss
Loyola University Chicago

Recommended Citation

Weiss, Sydell, "A Comparison of Two Approaches to One-Exposure Inservice Workshops Based on Questioning in Classrooms" (1974). *Dissertations.* Paper 1444.
http://ecommons.luc.edu/luc_diss/1444

This Dissertation is brought to you for free and open access by the Theses and Dissertations at Loyola eCommons. It has been accepted for inclusion in Dissertations by an authorized administrator of Loyola eCommons. For more information, please contact ecommons@luc.edu.

This work is licensed under a Creative Commons Attribution-Noncommercial-No Derivative Works 3.0 License.
Copyright © 1974 Sydell Weiss

A COMPARISON OF TWO APPROACHES TO ONE-EXPOSURE INSERVICE WORKSHOPS BASED ON QUESTIONING IN CLASSROOMS

by

Sydell Weiss

A Dissertation Submitted to the Faculty of the Graduate School of Loyola University of Chicago in Partial Fulfillment of the Requirements for the Degree of Doctor of Education

May

1974

ACKNOWLEDGMENTS

The individuals whose assistance made this manuscript possible are too numerous to mention by name. Teachers, administrators, family, friends, colleagues, and students have given support in various ways. I thank them all.

In a category of their own and deserving special mention are: my husband, for cooperation in a multitude of ways during the months of preparation of this manuscript; Marianne King, who was truly a companion; Bro. Bernard Glos, for his able assistance with the statistical procedures; Fr. David Turner, for being helpful when dissertation chores took energies away from teaching chores; and the members of my dissertation committee, Drs. Constantine, Gray, Trotter and Berlin, for their guidance.

VITA

The author, Sydell Weiss was born in Brooklyn, New York in December 1927.

She attended Public School 115, Thomas Jefferson High School, and Brooklyn College receiving the BA degree in June 1948.

After teaching English at Tilden High School, she left to raise a family and later continued her education at Newark State College (now Kean College) in New Jersey where she received the MA degree in 1970 after completing a reading specialist program. In 1971 she bagan doctoral studies at Loyola University in Chicago and completed the program in June of 1974 having specialized in the field of Curriculum and Instruction.

From 1967 to 1971 she worked with Title I programs, designed and implemented reading programs and taught reading at all levels in classrooms and clinics. A scholarship in 1971 allowed her to work as a consultant to school districts developing programs for gifted children. From September 1972 to May 1974 she was Assistant Professor of Education at Illinois Benedictine College.

She is a member of the International Reading Association, Association for Supervision and Curriculum Development, and was the first female admitted to Phi Delta Kappa in Dupage County, Illinois.

TABLE OF CONTENTS

CHAPTER I

Introduction

Nuclear American society is being bombarded by the changes brought about by technological advancements. These changes have affected every phase of modern man's life, placing him in the position of constantly having to adjust to an ever-changing environment. The fact that we are entering the last quarter of the twentieth century deluged with ever-increasing scientific achievements has also placed a tremendous burden on our society's educators. Coupled with these advances in technology is the knowledge explosion. Never before has there existed such a wealth of data to be learned, nor has the state of knowledge been so dynamic.

Educators are beginning to realize that they cannot teach all that there is to teach, nor can their students learn all that there is to learn. Our schools have been presented with their greatest challenge: how to educate today's youth for tomorrow's demands, while helping them function today. Recent developments in our knowledge of educational psychology, learning theory and human growth

and development suggest ways for our schools to begin to meet this challenge. One of these ways is by helping young people develop thinking skills through the use of higher level cognitive questions. The question has long been a primary tool in ordering the verbal interaction between teachers and learners. Research indicates that most questions asked by teachers, however, center around low-level recall of facts. In order to help young people develop their higher level cognitive processes, educators must change, among other things, their questioning behavior. They must learn new skills, new behaviors and new attitudes.

Each new development in the field of education then, also creates a problem: the problem of having to provide appropriate and effective teacher training for those educators already in service.

Statement of the Problem

> To anyone familiar with American education, it is quite evident that our most urgent educational problem is not the education of the un-educated - the education of school children or the functionally illiterate or the disadvantaged or the so called ineducable. It is the education of the educators. (Reno, 1968, p. 8).

Inservice education has long been considered an acceptable vehicle for introducing new techniques--such as how to ask higher level cognitive questions--to teachers.

It is generally recognized however, that inservice training programs have not been successful in promulgating change in teacher behavior.

Traditionally, administrators are given the responsibility for planning their districts' inservice program. Many administrators however, cannot provide the leadership, either because of job pressures, or their own inadequacies for the role. There also exists a tendency to assume that all teachers are the same, and as a result, the personal characteristics and individual needs and differences of the teachers are not accounted for by those planning the inservice program. Consultants, who are brought in to make the inservice presentations, often fail to help teachers bridge the gap between the abstract presentation and the actual concrete classroom implementation of the presentation. The resultant inservice programs are then generally limited to a series of totally uncoordinated workshops which are planned by the administration and conducted by outside consultants with very little prior planning or subsequent follow-through.

While a number of inservice designs have been developed (institutes, seminars, courses) most school districts have been limited by factors such as cost of teacher release time, consultant fees, and administrative, as well as teacher planning time, to utilizing a one-exposure

workshop format. Taking these time and money factors into account, the problem then lies in identifying an effective approach to introducing a new technique to teachers, within the framework of a one-exposure inservice workshop, which would result in teacher change.

Purpose of the Study

The purpose of this study was to compare two approaches to one-exposure workshops, Approach A and Approach B, to determine which was more effective in promulgating change in teachers' questioning behavior, by increasing the use of higher level cognitive questions.

Workshop Approach A was characterized by:

a. Judgment of teacher needs determined by the administration.

b. Use of outside consultants to ameliorate the perceived problem.

c. Content of the various presentations by consultants treated as discrete and unrelated to each other or to the ongoing curricular content and instructional materials being used by the teachers.

d. Consultants not interacting with each other but remaining involved in their own areas of expertise.

Workshop Approach B was characterized by:

a. Judgment of teacher needs determined by the administration in conjunction with the teachers and consultants.

b. Outside consultants attempt to ameliorate the agreed upon problems within the established limitations after reviewing the curricula of the district.

c. The contents of the workshop presentations interrelated and unified with each other and also with the actual classroom materials being used by the teachers.

d. Consultants combining their presentations to make clear the interrelationships of their individual disciplines.

In addition, Workshop C was a no-treatment control group.

Data was also collected on significant personal teacher characteristics (selected personality factors, age, teaching experience, social origin) to determine their effect on the incorporation of higher level cognitive questions into the teachers' classroom repertoires, independent of the workshop approach used. A simultaneous companion study, focusing on values-clarifying questions,

was coordinated with this study in Approach B to determine if the inclusion of values-clarifying questions would affect the use of higher level cognitive questions. The questions which this study sought to answer were:

1. Would the teachers exposed to workshop Approach B exhibit greater change in their cognitive questioning behavior?
2. To what extent was change related to the selected personality factors of the teachers?
3. To what extent was change related to the age of the teachers?
4. To what extent was change related to years of teaching experience of the teachers?
5. To what extent was change related to the social origin of the teachers?
6. To what extent was change in the cognitive questioning behavior of the teachers related to change in their values-clarifying questioning behavior?

Significance of the Study

> . . . inservice teacher training is the slum of American education - disadvantaged; poverty stricken; neglected; psychologically isolated; riddled with exploitation, broken promises and conflict (Davis, 1967, p. 1).

Research shows that inservice education has been ap-

proached by those engaged in its planning, in a potpourri of trial and error ways, with little thought given to objectivity and evaluation. As a result, there is a scarcity of empirical data available, bearing directly upon methodological models or theories and techniques appropriate to developing effective inservice training programs.

The dynamic state of knowledge however, necessitates the existence of inservice programs because preservice education cannot predict and meet all the future needs of teachers. Inservice education programs are vital because they provide teachers with the means for updating their knowledge, acquaint them with innovations, and enable them to learn new techniques. There exists then a need for the identification of effective approaches to inservice education programs.

This study hopes to make a contribution to educational theory and practice by gathering empirical data which can be used in developing a model for the training of teachers through inservice workshops that are effective within the existing parameters of time, costs, and available personnel. This study was also significant to the extent that:

1. It defined an approach for introducing teachers to an area of instruction which is often neglected in preservice education--the use of higher

level cognitive questions.

2. It made specific suggestions on how to utilize higher level cognitive questions in the classroom without changes in curricula or texts.

Assumptions

The following assumptions were formulated after a review of the literature; these served to delimit the hypotheses for this study. It was assumed that:

1. Inservice education programs were in need of new and effective modes of training teachers.
2. One-exposure workshops could result in effecting change in a teacher's cognitive questioning behavior.
3. Teachers were capable of changing their behavior as a result of inservice training.
4. Personal characteristics of teachers affected their acceptance or rejection of new techniques.
5. Personal characteristics of teachers affected their classroom behavior.
6. Teachers used questions in the act of teaching.
7. The ability to ask higher level cognitive questions was a technical skill which could be developed through training and practice.

8. Most teachers asked few higher level cognitive questions in the act of teaching.

Hypotheses

This study was designed to test the following null hypotheses:

1. There is no significant difference between the workshop approaches and the increase in the number of higher level cognitive questions asked by the subjects.
2. There is no significant relationship between the frequency of higher level cognitive questions asked and the selected personality factors of the subjects.
3. There is no significant relationship between the frequency of higher level cognitive questions asked and the age of the subjects.
4. There is no significant relationship between the frequency of higher level cognitive questions asked and the years of teaching experience of the subjects.
5. There is no significant relationship between the frequency of higher level cognitive questions asked and the social origin of the subjects.

6. There is no significant relationship between change in the frequency of higher level cognitive questions asked and the frequency of values-clarifying questions asked.

Delimitations of the Study

This study was limited to a one-exposure workshop in-service design based on how to ask higher level cognitive questions as defined by the Barrett Taxonomy (Clymer, 1968) in the classroom. The selection of the sample of teachers further limited this study to those teachers employed in a lower middle-class suburban elementary school district. This study did not attempt to:

1. Assess the consultants' behavior.
2. Assess the overall effectiveness of the teachers participating in the workshop.
3. Assess the effectiveness and/or quality of the higher level cognitive questions asked by the teachers in their classrooms.
4. Analyze variables other than those specified in the hypotheses.

Definition of Terms

1. A One-exposure workshop is a workshop in which the sub-

jects and consultants meet only one time.

2. Workshop Approach A is operationally defined through the meeting of the following criteria:
   a. Outside consultant is contacted by the administrator and asked to do an inservice workshop.
   b. Administrator names the workshop's topic and informs the consultant about group size and workshop location.
   c. After accepting the job, the consultant, independent of the administrator, decides on how to present the topic to the workshop participants.
   d. Consultant appears with the materials prepared at the specified time, presents them to the participants using whatever methodology decided upon, and leaves.
   e. Other consultants contracted for the same inservice time do the same (#a-d).
   f. The consultants work independently of each other and do not build upon each others' presentations.
   g. Consultant presentations are focused on theory rather than concrete application.
3. Workshop Approach B is operationally defined through the meeting of the following criteria:
   a. Outside consultant is contacted by the administrator and asked to do an inservice workshop.

b. Administrator suggests the workshop's topic and informs the consultant about group size and workshop location.

c. After accepting the assignment, the consultant sets up a meeting with the administrator and representative teachers from the group to be involved to determine the needs of the district in terms of the topic.

d. The consultant familiarizes himself with the district's curriculum, teaching methodologies, goals, organizational structure, etc., in order to determine the content, method, and materials to be used during the workshop.

e. Combining the identified needs of the teachers with the ongoing educational program, the consultant then decides on how to present the workshop's topic.

f. The consultant discusses his decisions with the administrator and the representative teachers, and modifications, if necessary, are made.

g. Other consultants contracted for the same inservice time do the same (#a-f).

h. All participating consultants meet to coordinate and interrelate their workshop presentations.

i. On the day of the workshop, the consultants present their topics and interrelate their materials with the other consultants' presentations.

j. Each consultant directly relates his presentation to the materials and methods currently being used by the workshop participants, to help the participants translate theory into practice in their classrooms.

4. Workshop Approach C is operationally defined through the meeting of the following criteria:

   a. No-treatment control group.

   b. These subjects are excluded from the workshop experience described above. The subjects are brought together for an inservice activity totally unrelated to the approaches being compared.

5. Values-clarifying questions are operationally defined through the meeting of the following criteria:

   a. Must be a personal question which asks about the learners' own ideas, actions, feeling or intentions.

   b. Must contain the word you in reference to the learner (i.e., what do you think, feel?).

   c. Questions whose answers are known only by the learner.

   d. Must be a question for which there is no right or wrong answer. Each learner may have a different

response.

6. The cognitive level of questions asked are defined by the Barrett Taxonomy (Clymer, 1968) as follows:
   a. Literal comprehension ideas and information are explicitly stated. This level includes recall and recognition.
   b. Reorganization requires the learner to analyze, synthesize and/or organize ideas or information explicitly stated.
   c. Inferential comprehension - learner's answer is not explicitly stated in a selection but rather inferred from his personal experience.
   d. Evaluation requires the learner to make an evaluative judgment utilizing external/internal criteria.
   e. Appreciation calls for the learner to be emotionally and aesthetically sensitive to the learning experience.
7. Lower-middle class suburban community is defined as one composed mainly of semi-skilled and blue-collar workers.
8. Personality factors are operationally defined by the subjects' scores on the Myers-Briggs Type Indicator (1962) and the Heslin-Blake Involvement Inventory (Jones & Pfeiffer, 1973).
9. Age - Chronological age in years of the subjects.

10. Years of Teaching Experience - Total number of full years of contractual teaching, regardless of interruptions or leaves of absence.

11. Social Origin - The economic status, occupational role of parents, and the location of the participants' childhood homes.

CHAPTER II

The review of the literature revelant to this study is divided into four major areas:

Inservice education

Teacher characteristics

Cognitive questioning

Relation of cognition and affect in classroom learning

The following resources were consulted in searching our current literature in addition to computerized searches of ERIC, CIJE, and DATRIX:

Research in Education

Current Index to Journals in Education

Dissertation Abstracts

Education Index

Encyclopedia Index

Encyclopedia of Educational Research

Professional books, journals, and papers related to the topic.

Inservice Education

"Historically inservice education was invented to correct serious deficiencies in pre-service education (Asher, 1967, p. 1)." As pre-service training developed into professional college preparation, the focus shifted and the need for viable inservice programs now exists as the result of incomplete pre-service training (Austin, 1968). Austin's conclusions, based on a summary of the Harvard-Carnegie and Conant reports, were further developed in a series of reports by Joyce (1968). These indicate that even student teaching, which has been regarded as the most effective aspect of pre-service training, may, in fact, be of little value. Although promising programs and innovations do appear in teacher education institutions, a fairly conventional program still exists--primarily as a result of state certification requirements. This basic pre-service program has been well researched and found wanting.

> No such conventional program can be described however for inservice education. If any generalization is possible, it is that schools do very little inservice training, and what they do is poor. Most school districts budget little or no money for such training and limit themselves to a program consisting of faculty meetings and one-day teacher institutes . . . .
>
> Local workshops are also a part of many inservice programs. These often focus on specific new curricular materials such as a new science or math pro-

> gram, and are useful in updating the teachers' knowledge, but they rarely provide any effective training in the new methods needed to use the curriculum to its best advantage. In fact, perhaps the most remarkable thing about inservice education as a whole is that so little of it focuses on these teaching methods. Actually the reverse should be true. The inservice setting is particularly well suited to instruction in classroom skills, since the teacher has ample opportunity to practice new skills in his own classroom. Furthermore, most inservice teachers, especially those just starting their careers, intensely want to develop better teaching skills (Borg, 1970, p. 23).

Rubin (1969) concluded that the first two years of a teacher's experience are the most crucial. It is during this period that attitudes and beliefs are shaped and the basic characteristics of a teaching style are established. Rubin feels his research also provides evidence that "teachers cannot learn to teach until they begin to work with children who are learning . . . (p. 4)."

Concurrent with the shift from a "deficit repair" approach to inservice programming to a "growth" approach for further training and refinement of skills, complicating factors developed--specifically, the knowledge explosion. Increases in knowledge of the psychology of education, increases in the bodies of knowledge in the various content areas, the development of instructional hardware, and the changes in the make-up of the student bodies as a whole created almost instant obsolescence of educational training.

Harris and Bessent (1969) reviewed the literature relating to inservice education for the past thirty years and summarized the need for inservice education as resulting from rarely ideal preservice programs, obsolescence of practices and methods, changes necessitated in articulation and coordination as curricula change, and the increase in staff morale that such programs can foster.

The change in the focus of inservice activities has led to a proliferation of programs with great diversity of purpose which vary according to the answers to such questions as:

1. Who is to be trained? Why?
2. What is to be taught? Why?
3. Is the training for specialized units?
4. Is it retraining or additional training?

According to Westby-Gibson (1967) the prime purpose of inservice training is to change educational practices and most importantly to upgrade and improve classroom instruction. However Harris and Bessent (1969) feel that the prime goal is to change people. Wallen (1969, p. 45) states: "The need for inservice teacher training is brought about when changes introduced in curriculum and instruction are so far-reaching that the teachers cannot cope with them without retraining." Other purposes for inservice education stated in multitudinous reports are:

1. Changing to a new content area or grade level.
2. Returning after a prolonged absence.
3. Learning specific competencies.
4. Increasing command of content area knowledge.
5. Training to adjust to new organizational structures such as team teaching, open space buildings, non-graded classes, etc.
6. Maintenance of certification.
7. Moving ahead on the local salary schedule.

Ideally, the determination of the purposes for in-service programming should indicate the evaluation procedures to be used in judging the program's effectiveness, as well as the format and content of the program itself. However, this does not appear to be the case. The literature supports the probability that there are as many approaches as there are individuals involved in preparing and offering such programs. The approaches cover the gamut from formal lectures and courses, observations, "share the ignorance" buzz groups (Rubin, 1973), guided practice with video feedback, to sensitivity groups and transcendental meditation. The lack of confluence between purposes, methods, and evaluations of effectiveness is further confused by two or more methods being used concurrently. Bhaerman's (1970) contention that inservice programs are not based on a total educational philosophy

is well supported in the literature. The questions of "What to present?" and "Why?" are not usually answered in the program descriptions, nor are questions dealing with "To whom?" and "How?". The question of "When?" is not dealt with either.

> Scheduling usually turns out to be an important factor in the success of the program. Too often the nature of the program is dictated by the time available. Otherwise well planned inservice programs are slap-dashed into the day or two before school starts when most teachers would prefer to be getting their room ready and their thoughts ready for the arrival of the children. Or they are tacked onto busy school days when the thoughts of even the most conscientious teachers are on other things--rest and rehabilitation being very prominent among them. If inservice programs are worth careful planning, they are also worth the time required for implementation . . . .
>
> If only limited time can be made available, then the activities must be limited to fit the time. . . .
>
> Some school systems provide a number of inservice days throughout the school year. The children are dismissed and the day is available for whatever work needs to be done. The idea is sound and the plan workable so long as the days do not become catchalls for administrative tasks or deteriorate to grab bag sessions where a variety of speakers are brought in to amuse, delight, and inspire the assembled throng (Otto & Erikson, 1973, p. 14).

It is not surprising that Hermanowicz found general dissatisfaction with existing programs. "Rigorous studies are rarely reported, forcing practitioners to speculate concerning the mistakes others have made (1966, p. 4)." The failings are attributable to inappropriate purposes,

inappropriate activities selected without regard to the purposes to be achieved, and lack of skill among those who design and conduct instruction improvement. The lack of findings suitable for guiding future researchers develops from the fact that

> . . . inservice education as an instrument for organizational change becomes a non-repetitive process similar to research and development activities . . . Research in the field is meager. Reports of practices are sketchy and tend to be reported as local success stories rather than as objective descriptions (Harris & Bessent, 1969, pp. 20,1).

Amidon (1967, p. 256) suggests two questions that ought to be asked of any inservice program, regardless of its origins, orientation, or emphases. First, will teachers be acting differently in the classrooms as a direct result of the training? Secondly, if there are changes, has the quality of instruction improved or is it just different?

A powerful tool for effecting change via inservice programming could be the vague, difficult to define, complex phenomena labeled "evaluation". However, aside from establishing mastery of behaviorally stated minimum goals, the tools available are crude, and as a result the reported findings are subject to interpretation and reinterpretation by other researchers as they follow their own predilections.

Clearly formulated statements of the pre-existing

school programs should precede any planning for change through inservice training. These statements would enable planning and evaluation to be done in terms of "Change from what?". The need to make assumptions that the schools, staffs, and curricula are similar to those in the reported past studies could also be eliminated by such precise descriptive statements of the pre-existing program of the district for which the inservice training is being planned. From such statements, program designers could also determine:

1. What change is needed and why?
2. Who and what shall be changed and why?
3. When will the change take place and why?
4. How will the change take place and why?
5. How will the change be initiated, accomplished, maintained, and assessed?

In the past, evaluation of inservice training has often been misdirected because underlying assumptions were not clarified. Moburg (1972) in discussing past decisions regarding evaluation clearly delineates a crucial area of confusion--Who is to be measured? Is direct measurement of teacher growth appropriate for evaluating inservice activities, or should pupil growth be measured, or both? Since there is consensus that the aim of inservice training is to provide for measureable improvement of instruc-

tion, success or failure must ultimately be measured in terms of pupil growth. Yet, Moburg cites longitudinal studies where teacher growth was both obvious and measureable, but not pupil growth. A year or more later, pupil growth was also measureable. Is evaluation of inservice programming then to be done only after an appropriate time lag that enables the changes in teacher behavior to be manifested in pupil growth? This appears to be a clumsy, time consuming, and expensive solution.

Bush (1971) agrees with Rubin's (1971) statement that judgment of quality in inservice education is ultimately in the students' learning. But, he adds, ". . . alteration of teacher behavior can be considered a legitimate objective in and of itself (p. 65)." Herrick (1957) proposed that changes ". . . be determined by the difference that exists between the starting point . . . and the last observation . . . . This suggests evaluation based on judgments of relative rather than absolute value . . . (pp. 312-313)."

Decisions as to what training shall be given, and who shall give it open additional areas of inquiry regarding inservice education. While most researchers agree that the future participants should be involved in these decisions, they admit that this active involvement in the planning is given only token consideration for reasons of

time, cost, scheduling, and expertise. Classroom teachers are usually so caught up in the day-to-day activities that they cannot see their own needs objectively. Consequently, the decisions are most often made at the administrative level. Teachers make excellent trainers of teachers but contractual considerations make allotment of preparation and presentation time unlikely (Rubin, 1969). Buskin (1970, p. 23) noted that university personnel were poorly prepared to serve as trainers, and administrators seldom have the time necessary, or the personal relationships with their staff to do the job effectively. Morison (1966) introduced the concept of a "change agent" as a new educational role when he advocated the use of an outside force as a catalyst for change. Although the role is not precisely defined, there is recognition of the fact that special talents and knowledge are required. According to Lavisky (1969, p. 6) the typical public school teacher or administrator possesses neither the research skills nor the habits of scholarship necessary for effective planning, implementation, and evaluation of inservice programs. He concludes that trained, knowledgeable outside consultants are in all likelihood the persons best suited to do in-service training.

Perloff's (1970) study of NDEA Summer Institutes supported earlier research relating to time and scheduling

factors. Although the programs were of long duration while teachers were "on vacation"--a supposedly ideal situation--she reported ". . . it is probably unrealistic, and perhaps even unfair, to expect programs of the length, scope, and nature of summer institutes to make sweeping, radical, and immediate changes in the participants' knowledge, attitudes, and teaching practices (p.46)." The report recommends that all inservice programs:

1. Be planned in terms of the participants' needs.
2. Be relevant to a major and significant part of what the participants teach. Topics too remote from the ongoing school curricula are a waste of time, money, and effort.
3. Be practical in orientation--readily usable when the participants return to their classrooms.

Rubin (1969), Amidon (1967), and Mackie and Christensen (1967) corroborate the basic finding of Perloff--that of practicality. In reports, the application phase of learning seemed to incur the most difficulty. Mackie and Christensen claim that the "research to application process" has never been properly developed. Although ". . . teachers are more effective when they have alternative strategies with which to teach a given lesson, each of these strategies must be acquired systematically and each must be perfected through cumulative practice

(Rubin, 1969, p. 13)."

The components of successful inservice training--that which is reflected in classroom behavior--has been summarized by Lavisky (1969, p. 10-11).

1. Timeliness--fills an ongoing instructional gap.
2. Interest--from staff and administration.
3. "Engineering"--product or process is easily adopted.
4. Concreteness--material items (lesson plans, texts, A-V aids) are provided.
5. Zeitgeist--timing, materials, personalities, etc. "jell" during the training period.
6. Personal interest--a person with influence and credibility serves as a forceful proponent of the presented content.

Gross (1968) analyzed the effectiveness of inservice activities from the opposite view--that is, why programs are so often ineffectual in promulgating the anticipated changes. He noted five specific contributing factors:

1. Staff resistance.
2. Lack of clarity of the innovation.
3. Group or individual inability to perform the innovation.
4. Lack of existence of necessary materials and resources.

5. Lack of compatibility between organizational conditions and the innovation.

The extensive literature relating to inservice education reveal no previous study similar to the current one. However, trands can be noted from the following summary statements of reported studies which deal with the various aspects of this study.

Reese (1966) compared the results of training one hundred seventy-five teachers by different methodologies: lectures, study groups, and consultants. Effectiveness of the training was analyzed by responses to a questionnaire, reports from project directors, and detailed observer reports. No empirical data was generated and consequently no statistical analyses were possible. It was generalized that the participants thought highly of the program, but without a data base this conclusion may be erroneous.

Leary and Wolf's (1972) examination of short term programs was designed to determine the extent to which such programs are recognized as sources of information about educatioanl innovations and contribute to the adoption of innovations. Factors identified for analysis were program attendance, source of support, subject matter, and participants' judgments of the program's worth. Overall conclusions were that the programs generated more awareness of innovation and more adoption of innovations

than was anticipated. Faulty experimental design precludes attribution of the changes directly to the nature of the program.

Carline (1970) focused on the feasibility of training-out undesirable verbal behaviors of teachers and/or training-in preferred ones through inservice activities. For analysis, the teachers were matched demographically; students were matched by intelligence; and schools were matched by statements from local administrators. The analyses showed that of the seven verbal behaviors to be trained-out, none were accepted. Five of the seven to be trained-in were accepted. The data allow the conclusion that inservice programs can modify teacher behaviors in one direction only--the addition of behaviors to the teaching repertoire. Carline's study failed to show any pupil change related to the teacher change, most likely reflecting Moburg's statements regarding delayed student growth.

Several studies have been reported which were designed to measure some aspect of change in classroom questioning strategies as resulting from inservice training. None, however, compared alternative methods of presenting the same content within the constraints of a one-exposure workshop, nor have any previous researchers examined the interrelation of affective and cognitive

questioning behaviors in classrooms.

Allen (1967) developed an inservice format for the development of what he termed "technical teaching skills". Question-asking was considered to be one such generic skill. Although specific findings for change in questioning habits was not reported, there is generalized support for a need for change in classroom questioning and for the use of inservice activities as a vehicle whereby teachers can acquire the needed skills.

Ward (1970) also examined development of improved question-asking skills through inservice programs. Using microteaching episodes for analysis, he focused on the mode of feedback given to the participants--videotapes, audiotapes, a combination of both, and self-reflection--for self-analysis of acquired learnings. The study involved seventy-eight teachers, randomly assigned to treatment groups for two day training programs in question-asking. Using a pretest-posttest design, he concluded that change in questioning could be instituted through inservice programs and that audiotaping alone was the most effective feedback tool. This finding cannot be accepted without question since no discussion of the participants' previous experiences with videotape was included. Borg (1970) had noted that self-analysis of the first videotapes was affected by a "cosmetic effect" that caused the participant

to focus on appearance, voice, and other extraneous factors when viewing the earliest tapes.

Adair and Kyle (1969) focused on the training-out of use of rhetorical questions and the training-in of increased use of probing questions. Using videotape feedback with a sample of sixth grade teachers, they concluded that the methodology did indeed reduce the number of rhetorical questions significantly, and increased, not significantly, the number of probing questions. The use of videotape as a feedback tool was not compared to other techniques. The relation of this report to Ward (1970) and Carline (1970) is obvious in that these later studies re-examined two of the factors involved in researching the effectiveness of inservice training--the problem of train-in vs. train-out, and the feedback method. The present study has examined yet another factor, the approaches employed in one-exposure inservice presentations.

During the development of mini-course programs, Borg (1970) researched inservice programming and classroom questioning habits extensively. The main field test for the elementary program involved forty-eight teachers with an average of nine years of experience. Trained students were used to make pre and post evaluations of videotapes of the participants. The four treatment sessions resulted in significant change in ten out of the

twelve categories. Re-analyses were done by grade level, sex, and socio-economic status of the pupils to determine if adoption of the skills was related to the kinds of children being taught. The results indicate that neither sex nor grade level were significant factors. However, teachers employed in working class districts showed greater growth in most categories. A companion study at the secondary level showed generally less change.

In terms of the variables accounted for, Bruce's (1969) dissertation most closely resembles this study. The variables of age, personality, and experience, as well as science knowledge, were incorporated into the experimental design for measuring the effects of a three week summer inservice institute. Trained raters, using a question taxonomy developed by Harris and Bessent (1969), evaluated the pre and post measures. No relation between personality or age and change in questioning was found. A negative correlation between teaching experience and positive change in questioning habits as well as a positive correlation between science knowledge and improved questioning habits were noted.

Various components of the present study have been researched, in an effort to make inservice education viable but the question, "What approach will be most effective within the parameters that exist for most school

districts?" has been unexamined. There is a large gap between theory and practice in most areas of the day-to-day school world and in the case of inservice education, both elements are weak. Past research indicates that effective inservice involves such diverse factors as philosophy, people, planning, programs, performance, and practices--to name a few. There is ". . . a diversity of well discussed views about the specific goals of education but precious little agreement about the goals of inservice education. In addition, there is even less empirical evidence as to its effects (Benjamin, 1968, p. 550)."

The literature review led to the identification of a feasible approach to Workshop B--the experimental approach. The recommendations which were incorporated into the design are summarized as follows:

1. Outside consultants are the persons best suited to do inservice training (Morison, 1966; Lavinsky, 1969).
2. Inservice programs should be planned 1) in terms of the participants' needs, 2) be relevant to a major and significant part of what the participants teach, and 3) be practical (i.e. useable in the classroom) in orientation (Perloff, 1970; Rubin, 1969; Amidon, 1967; Machie & Christensen, 1967).

LEWIS TOWERS
LOYOLA
UNIVERSITY
LIBRARY

3. Both teachers and administrators should be involved in the planning of inservice activities (Ploutz, 1963).
4. Inservice programs can modify teacher behavior in one direction only--the addition of behaviors to the teaching repertoire (Carline, 1970).

In addition, the recommendation of the Eastern Regional Institute for Education (ERIE) to incorporate a theory of change into the design of an inservice workshop was also followed (Ritz, 1970). The theory and model developed by Getzels (1958) entitled "Administration as a Social Process" was selected as the change model to implement the ERIE format. The Getzels model stresses two dimensions of activity in a social system--the nomothetic and the idiographic.

> The major elements which constitute the nomothetic or normative dimension of activity are those of institution, role, and expectation. For example, the activities in which workshop participants engage in order to learn the necessary content and methods of a new curriculum are considered to be nomothetic activities. On the other hand, the elements of individual, personality and need disposition constitute the idiographic or personal dimension of activity in a social system. Activities designed to keep workshop participants happy, comfortable and interested in what is going on are idiographic in nature. Getzels' model assumes that for effective organization, there needs to exist a reasonable balance between task accomplishment (the members of a workshop feel instructional goals are being achieved) and a sense of personal social satisfaction (Ritz, 1970, pp. 12-13).

It was further decided that in Workshop Approach B, the participants would be given concrete applications of the workshop's topic. According to Williams,

> We have found in our applied work of educational engineering that relevant research studies need to be translated into action programs for the classroom teacher. Latest research findings on learning and thinking must be implemented at the operating level, and teacher inservice training programs be offered in an operationally orineted direction, i.e., from the researchers concern with the what to the teachers concern with the how (1968, p.11).

The major difference between Workshop Approach A and Workshop Approach B is best explained in terms of the Getzels model. The traditional emphases in workshop planning (Approach A) has been upon the nomothetic dimension--securing consultants well-versed in the content of the workshop, providing the materials for instruction, and the like. The experimental approach (Approach B) takes into account not only this nomothetic dimension, but the idiographic dimension as well.

Teacher Characteristics

Evaluation of research done during the past decade relating to the characteristics of teachers that might affect their classroom behavior led Jansen to conclude that ". . . investigations do not develop any pressage factors that determine teaching behavior and open the possibili-

ties for intervention and control in education (1972, p. 43)."

This conclusion regarding the impact of teachers' personal characteristics on performance has always been generally accepted and is reflected in teaching assignments, committee appointments, organizational arrangements such as team teaching, extra curricular activities, and even in the self-selected social groupings of the teachers' lounge. It seems ironic that variations of teacher characteristics have been, and will probably continue to be, ignored when planning or evaluating inservice activities. The activities are most often arranged in terms of organizational convenience--that is, by building, grade level, or subject area. Formation of groups on these bases is predicated on the faulty assumptions that all teachers in the group are equally in need of the training to be offered and will be equally able to accept, internalize, and apply the presented content. Research has shown, however, that many non-academic characteristics affect teachers' professional performance of which inservice education is a vital component.

Reported relevant literature indicates the prime factors to be considered when planning for teacher growth are personality, age, social origin, and teaching experience. A great deal of overlapping appears in the reports,

caused not so much by faulty experimental design, but by working with human beings in non-laboratory environments, by a lack of uniform definitions, and by the interrelatedness of the specific factors. Teaching experience, for example, is contaminated by grade level or subject taught, as well as by total number of years of experience. Yet the factor of years of experience is usually a function of age. Similarly, as Havighurst and Neugarten (1967) point out, personality and social origin interact--first in the choice of teaching as a career and later, as Getzels (1967) indicates, in classroom behavior.

The research, consequently, is fragmented and findings are often diametrically opposed making it impossible to draw incontestable conclusions. The trend of past research findings indicates that a relationship exists between personality, social origin, age, teaching experience and the ultimate outcomes of inservice education. Therefore, appropriate analyses of inservice programs should account for these factors in their relation to teacher change.

Ryans' (1960) classic study was an attempt to isolate the personal and social characteristics for which evidence exists of a relation to teaching behavior. Research prior to the development of the National Teacher Examination had shown such factors to be relevant to the

identification of effective teachers. Technical considerations precluded their incorporation in the test itself which in its final form covers only academic learnings. Ryans was able to assemble a composite profile of an effective teacher and states that the factors tend to cluster, and further that these clusters of characteristics in any given teacher vary in their impact on learners, depending on the personal and social characteristics of those learners. Barr (1960) attempted to further clarify Ryans' work through the development of a scale for classifying these personal qualities of teachers. His purpose, like Ryans', was the development of an instrument that would be predictive of teacher effectiveness and consequently of value in planning teacher improvement programs. He used a precise behavioral definition of personality and multiple definitions of the items in the instrument to avoid ". . . the impression that the choice of vocabulary has rested pretty much on personal preference (p. 401)." The development of such a scale is significant in that it supports earlier researchers in their contentions that personality is a factor to be considered in evaluation of teacher effectiveness or growth. The utility of this scale is unverified. Barr states ". . . whether the scores have any practical value remains to be determined by further research (p. 408)." There are no reports of this having

been done.

Concurrent with the Barr and Ryans projects, Washburne (1960) also examined characteristics of teachers that are reflected in their classroom effectiveness. In addition to teacher types, he classified learner types, which Ryans had indicated would be additional variables. Using many of Ryans' terms in measuring teacher effectiveness as it relates to academic achievement and personal adjustment of students, he found no relationship between teachers' scores on the Teacher Education Examination and the growth of their students. Nor did he find a relationship between observed teacher behaviors and student growth. He did find ". . . clear evidence that the teachers' personality has a clear and measureable effect . . .(p. 428)."

Getzels (1967), in his description of the personal components necessary for effective teaching, clarified the interrelation of role perceptions and personality. In dealing with the perceptions and expectations of the teaching roles, he explains, conflicts develop, and it is the individual's personality which determines whether or not these conflicts ". . . will give rise to productive transformations (p. 319)." The influence of personality on conflict resolution is significant in any inservice project since internal conflicts are liekly to arise when new methods designed to promote changes in classroom be-

haviors are presented in the institutional setting.

Kleinman's (1965) investigation indicated that there must be some relation between teacher characteristics such as attitude and personality types and questioning behavior in science since no relation was found between the number of higher level questions asked and the educational or experiential backgrounds of the teachers was found. Kleinman asked, ". . . are there factors . . . common to those teachers who ask higher level questions (p. 308)?" Bruce (1969, p. 22) designed his dissertation in the hope of answering that question. Incorporating the variables of age, personality, experience, attitude, and science knowledge into his design, he evaluated the results of a three week summer inservice program through measures of change in the questioning processes of the participants. He found no relation between personality and question asking, and a negative correlation between age and experience and improvement in questioning as classified by the Harris and Bessent (1969) taxonomy.

A weak objection to what he considered an overemphasis of the personality factor on classroom performance was voiced by Smith (1971). While agreeing that such an influence does indeed exist, he proposed planned training in generic skills which would allow for the incorporation of personal characteristics as a way to inte-

grate teachers' behaviors, thereby maximizing their classroom effectiveness. This suggestion that the effects of undesirable personality factors can be lessened through appropriate training in generic skills implies that the methods used in such training would be significant factors to examine as was done in this study.

Loy (1969) reported an attempt to isolate the social and psychological characteristics of those who adopt innovations and the length of time that elapses between learning of an innovation and its adoption. He found that both social and psychological components were predictive of the acceptance of new methods and of the rate at which adoption took place. Embree (1969) examined personality and life experience patterns (social origin) for their ability to predict innovative potential in educators. Analyses showed parental attitudes and "self image-initiative" as distinguishing factors. He also found that ". . . occupations, family size, social characteristics, and parental control were categories which did not distinguish . . . (p. VIII)."

Age and social origin and their effect on the educational viewpoints held--progressive vs. traditional--was examined by Peterson (1967). He found progressive views were most likely to be held by young adults from small towns or rural areas, and that having origins in

the lower or lower-middle classes was more conducive to holding these views. However, he judiciously avoided being locked into that position in concluding ". . . no doubt personality factors are also involved . . . (p. 332)." The same conclusion regarding age and the acceptance of what he termed "emergent beliefs" had been demonstrated by Prince (1957) a decade earlier. He found, using a forced-choice format, that youth, in both principals and teachers, predisposed them to choosing progressive over traditional methods.

The relationship of age to professional status is not always clear, however. Wattenberg (1967) focuses attention on those who return to teaching after raising a family. These teachers straddle the categories deemed significant. While being older, they have little experience and out of date training or, if they have taken their professional courses while their children were growing, their training is current and their experience is nil. Hence, it is problematical as to which group they belong to in terms of their professional lives. Also, as far as social origin is concerned, ". . . the status they held during marriage is more significant than that of their childhood homes (p. 295)."

In his study of the utility of microteaching with videotape feedback, Codwell (1969) found that neither

grade level taught nor teaching experience make a significant difference for inservice training. White (1967) also found lack of significance in his examination of age and grade level as factors in the determination of preferred formats for inservice education in science. Additionally, he found that released time during the school year was more effective than college courses, pre-school institutes, or weekly discussion groups. Butts (1967) also reported experience, as well as school location as being unrelated to teacher change. Brantner (1964) found that experience did indeed have a greater effect on those inservice programs which dealt with generic professional methods than it did on those that dealt with subject matter.

Eash's statement bears repeating-- ". . . our propensity is to turn human problems into technical problems and apply mechanical, statistical solutions (1967, p. 249)." "Hence our preoccupation with materials over people. Much of our activity is given to developing expertise and technical finesse in our teachers . . . (Meade, 1971, p. 223)." However, measurement of effectiveness in those terms excludes the "person" of the teacher as a factor in the success of the outcomes of inservice education. Research dealing with teacher characteristics indicates this exclusion to be a faulty assumption and that these qualities do, in some way, affect the eventual outcomes of training

programs for inservice teachers.

Cognitive Questions

The question has been a primary tool in ordering the verbal interaction between teachers and learners at least since Socrates' time. It is used to solicit information, verify understanding, lead discussions, promote creativity, encourage critical thinking, develop application of earlier learnings to new situations, test and evaluate, control the turn-taking of students, and most critically to retain teacher domination of classroom discourse (Adams and Biddle, 1970). Hudgins and Ahlbrand (1969) suggest ". . . teachers behave in this way because they simply do not know how to solicit extended pupil talk (Good & Brophy, 1973, p. 26)." Charles (1972) concurs, and adds that good questioning tactics should function as "mental massage" for students by increasing the amount and quality of student talk, decreasing the amount of teacher talk, and promoting student use of higher cognitive processes.

The often disastrous effects of the low cognitive levels of teacher questioning and the resultant low level of student responses is compounded by the ubiquity of these low level questions. As demonstrated in Adams' (1964) replication of Stevens' (1912) study, there has

been no change over time in the level or frequency of these questions. Haynes (1935) found that seventy-seven per cent of teacher questions requested a factual response. With gifted students, Gallagher (1964) found that teachers asked over fifty per cent of cognitive memory questions. Davis and Tinsley (1967) also found fifty per cent of the questions asked were at low cognitive levels in the classrooms they examined. Guzak (1967) found fifty-seven per cent of the questions asked required short, factual responses and another fourteen per cent required locating information in textbooks.

Further, there is an unequal distribution of these questions among learners. Good (1970), Krantz (1970), Mendoza, Good, and Brophy (1972), Jones (1970), and Horn (1914) all report that the high achieving students are given more response opportunities regardless of the level of the questions. Why this is possible is clarified in Bellack's (1966) analysis of classroom language with "rule eight" being crucial--the teacher controls the extent to which pupils play.

Most educators when confronted with these "facts of school life" feel, nonetheless, that question-making is a basic instructional device, and that effective teaching depends heavily upon effective questioning (Aschner, 1961; Laughlin, 1961).

Other researchers have directed their energies toward changing the questioning behaviors that are prevalent, since educational goals usually include: organizing acquired information, applying past learnings, evaluating, and developing new concepts. These processes cannot be developed with a predominance of factual recall questions. Therefore many researchers have devised classification systems for questions--first, as an aid to identifying them; second, to enable teachers to classify their own questions; and third, to assist teachers in modifying their use of questions (Carner, 1963; Crump, 1970; Clements, 1964; Guzak, 1967). These classification systems have been based on modifications of either the Guilford (1960) model of the intellect or the Bloom (1956) taxonomy of educational objectives. The popular appeal of Sanders' (1966) book has made the Bloom taxonomy the more widely used structural base for the classifications. A survey of these classification systems demonstrates concern for identifying the cognitive levels of questions in order to arrange them in hierarchical order. Another approach has been to identify the function, rather than the level, of questions in manipulating the cognitive climate of the classroom. This led Smith and Meux (1960) to develop the criteria of defining, describing, resignaling, stating, substituting, evaluating, etc. While these categories give much infor-

mation as to the verbal climate in a classroom, the system is cumbersome. However, it does give information on the procedural and control tactics of the teacher as well as on the cognitive levels of the discourse. Batchelder (1964) also formulated a descriptive system according to the function of the question as differing from the cognitive level. Bellack (1966) carried the system to its ultimate in developing a system for classifying all classroom discourse. His analysis found the "soliciting - responding - reacting" pattern the most common verbal episode, proving once again that in classrooms--teachers ask questions and students respond.

However, such descriptions of classroom language may not give indications of successful teaching.

> It is unlikely that any single dimension of classroom discourse described here will be found to have a consistent relationship to any single dimension of learning. Rather it seems likely that further studies might seek to identify clusters of variables - types of teaching profiles - that might possibly be related to certain outcome variables (Bellack, 1966, p. 235).

Gall (1970) indicates that, while the classification systems that have been developed are suitable for research purposes and for determining how and why teachers ask questions, most of the taxonomies require extensive modification for use by the classroom teacher. Groisser (1964) and Laughlin (1961) took simpler approach-

es to categorizing question levels and functions by using such terms as explain, justify, and illustrate, instead of the terminology of either Bloom or Guilford.

The proportion of thought to memory questions, identified by using the various classifying schemes, has not changed since Stevens (1912) first reported that two-thirds of high school questions called for direct recall of information. Corey (1940) found seventy-one percent at low levels in a laboratory high school. Floyd (1960) found the discourse of forty "best" teachers included forty-two percent low level questions. Rogers' (1969) dissertation reported that memory questions constitute sixty percent of oral questions, ninety-one percent of written test questions, and eighty-seven percent of fifth grade social studies textbook questions. Davis and Hunkins (1966) report the same proportion of fact and recall questions in texts regardless of whether they are part of content or process oriented programs. Cooke (1970) analyzed questions using the Barrett (1968) taxonomy of cognitive and affective dimensions which is based on a synthesis of the work of Bloom, Guilford, Guzak, and Sanders. This taxonomy has five major categories, four cognitive and one affective, and thirty-three subdivisions. Cooke's analysis of 3536 questions found fifty-five percent literal, twenty-six percent inferential, six

percent reorganization, and three percent evaluation. He also presents evidence that performance at the higher levels incorporates the preceding lower level tasks. This inclusion of the lower level cognitive tasks in performance at higher levels implies that the over-abundance of low level questions actually serves no purpose at all.

The use of the Barrett Taxonomy as a device for evaluating questions is based on its original development as a classification system for reading comprehension questions. In pre-service education the only area in which classroom questioning tactics are commonly introduced is in reading methods courses where various levels of oral and written questions are analyzed as a means of evaluating comprehension of what was read by the students. This relation to concepts introduced to teachers during their undergraduate training and therefore simply an extension of earlier learnings that are supposedly being applied during reading lessons made the Barrett Taxonomy a likely choice for use in analyzing the questioning strategies for this study. Barrett considers this taxonomy to be a system

> . . . which would provide an understandable and manageable basis for developing specific goals, selecting learning activities and designing evaluative techniques for the cognitive strand . . . (Cooke, 1970, p. 15).

The established state of classroom questioning has led researchers to devise ways of changing teachers'

question asking behavior. Houston (1935) was one of the earliest to attempt to foster change through inservice education. He scheduled a six week program using several approaches; group conferences, analysis of stenographic reports, and teacher self-evaluation. Only eleven teachers were involved and no statistical analyses were performed. The raw data shows a trend toward improvement on the part of the participants. The Trosky (1972) study, involving only five teachers, used supervisory conferences as the method of changing classroom questioning. The findings indicated a trend toward improvement in four of the five subjects. Constantine (1969), using a modification of the Gallagher and Aschner classification based on the Guilford model, trained a group of eleven student teachers. No significant improvement was noted when comparisons were made with a control group. Adair and Kyle (1969) reported positive teacher change in questioning resulting from inservice training that utilized videotape feedback. Bruce (1969) reported positive correlation between higher level questioning and content knowledge but a negative correlation between years of experience and degree of change in asking higher level questions.

Questioning behavior has been neglected in methods courses and modification of the resultant poor question-

ing tactics used in classrooms has not often been the focus of inservice workshops according to Crump (1970). She states that teachers cannot function well in this area without such training, and that the imbalance in favor of low level questions as demonstrated by earlier researchers implied that teachers would benefit from a program designed to improve their questioning strategies. Specifically:

1. Teachers should be acquainted with a means of classifying questions to ensure that higher cognitive powers are tapped through written and oral questions.
2. Tools for self-evaluation should be employed (videotape, audiotape, microteaching, etc.).
3. Instruction in questioning should cut across all subject areas.
4. Appropriate balance between "fact" and "thought" questions should be developed.
5. Teachers should learn to accept "reflective silence" after they pose a question.
6. Techniques for soliciting additional responses should be developed.
7. Precise phrasing of questions and elimination of repetition should be practiced.
8. Teachers need to be trained to develop pivotal

questions which raise thinking above the factual level.

9. Inservice training should be scheduled at regular intervals to reinforce concepts.

To aid in the instruction of teachers, she devised a classification scheme that incorporated earlier systems into four categories, two of which are convergent and the remaining two divergent.

Analysis of 3289 questions before and after self-instruction in use of the classification system showed reduction of convergent questions from eighty-nine to seventy-three percent. A second group who followed self-instruction with demonstration lessons for peers showed even greater growth.

To summarize, researchers have examined the type and frequency of teachers' questions, created classifying schemes, developed various programs to instruct teachers so as to promote better questioning habits, and made recommendations for changes in past training practices. Every report showed some improvement in classroom question levels after training regardless of the methodology employed--group discussions, supervisory conferences, micro-teaching, video and audiotaping, self-instruction, etc.

However, no report has been located in which the in-service training was designed to accommodate the one-ex-

posure workshop that is prevalent in school districts. Nor has any report been located which focused on the interrelation of cognitive and affective questioning.

> According to Campion, the right question, adroitly wielded at the right time magically unlocks the flood gates of communication and thought. With the mounting evidence that intelligence can be created, perhaps we need to direct more attention to the relation of IQ to TQ--teacher's questions (Crump, 1970, p. 660).

Interrelation of Cognition and Affect

There is almost universally an arbitrary and unrealistic separation of cognitive and affective concerns. Past literature tends to deal with thinking and feeling as separate strands within the same man. The tendency is further encouraged in education by curriculum statements, some of which focus solely on subject matter and others whose sole focus is affective growth. There even exist two separate taxonomies of educational objectives, one in the cognitive domain and the other in the affective domain. In spite of this dichotomy there is evidence of a reciprocal relationship between cognition and affect.

Rogers (1969) states that emotional growth, of necessity, facilitates both cognitive achievement and learning efficiency. Gagnon (1965) verified increased cognitive development as resulting from affective activi-

ties in fifth and sixth grade classrooms.

> There is a constant parallel between affective and intellectual life throughout childhood and adolescence. This statement seems surprising only if one attempts to dichotomize the life of the mind into emotions and thoughts. But nothing could be more false or superficial . . . of course affectivity is always the incentive for actions . . since affectivity assigns value to activities and distributes energy to them. But affectivity is nothing without intelligence. Intelligence furnishes affectivity with its means and clarifies its ends . . . .
>
> Intelligence thus begins neither with knowledge of the self nor of things as such but with knowledge of their interaction, and it is by orienting itself simultaneously toward the two poles of that interaction that intelligence arranges the world by organizing itself (Flavell, 1963, p. 62).

Jones (1968) points out that to focus on one, either cognition or affect, to the exclusion of the other results in bad education. "Perhaps the heaviest intellectual burden that we need to relinquish is the one that dichotomizes affect and intellect (Eisner, 1973, p. 198)." There is currently a movement in the field of education to end this dichotomy.

> If persons are to behave as integrated wholes then thinking-feeling cohesion is essential. To dichotomize the cognitive and affective promotes a way of conceptualizing about persons which is not always fruitful in view of the grossness and overlapping nature of each of the concepts (Berman, 1968, p. 3).
>
> Our behavior is influenced by both our thoughts and feelings. So far as our actions are concerned, reason and action are of a piece . . . . It is imperative that thought (cognition) and emotion (affect) be integrated so that one informs the other (Rubin, 1973, p. 5).

> Extrinsic learning--that based on the objectives of the teacher--is essential to a well informed mind. Intrinsic learning--that based on pivotal experiences through which we come to know ourselves--is equally indispensable to becoming fully human (Maslow, 1973, p. 169).

In spite of these cries for confluent education, the effects of tradition remain. "That tradition, stemming from Plato's distinctions between the life of feeling and the life of thought, provided the bedrock upon which so much educational practice has been based (Eisner, 1973, p. 196)."

This dichotomy was virtually unquestioned for twenty-three hundred years until Dewey in Experience and Nature (1925) and Theory of Valuation (1939) described emotions as "blind and gross" and the function of thought as giving them meaning and direction. The concepts that emotion and reason are separate, that thoughtful reflection and knowledge of fact have no relevance for matters of valuing, are in error. Elimination of the dichotomy that has existed in our thinking between emotions and intellect is necessary. In Democracy and Education (1916), Dewey is even more explicit as to the reciprocity of cognitive and affective functioning.

> To "learn from experience" is to make a backward and forward connection between what we do to things and what we enjoy or suffer from things in consequence. Under such conditions, doing becomes a trying; an experiment with the world to find out what it is like; the undergoing becomes instruction--discovery

> of the connection of things . . . . Experience is primarily an active-passive affair; it is not primarily cognitive (p. 140).

Simple mastery of intellectual ideas is not the primary function of education. Later in the same book he states:

> Knowledge is humanistic in quality not because it is about human products in the past, but because of what it does in liberating human intelligence and human sympathy. Any subject matter which accomplishes this is humane, and any subject matter which does not accomplish it is not even educational (p. 269).

In the mid 1960's learning theorists began to study the relation of affect and cognition. Piaget's (1969) book came as a surprise to those cognitive psychologists who often cited his work as a source of how intellectual development occurs. The old dichotomy is destroyed in statements such as, "There is no behavior pattern, however intellectual, which does not involve affective factors as motives . . . . The two aspects, affective and cognitive, are at the same time inseparable and irreducible (p. 158)."

According to Guin-Décarie (1965) the earliest discovery of the cognitive principle of permanence comes from the infant's affective ties to people. Between the ages of two and six, the cognitive task of language development enables the child to find ways to cope with conflicts that exist between his needs and his environment.

As the child incorporates aspects of the world to fit his views, he changes his ideas. Cognitive development occurs during this transaction, as does a concept of self-esteem. The process does not end with infancy, but continues through childhood and adolescence. As children attempt to order their world, their search for coherence becomes affective. This provides the motive which can be used in schools for cognitive growth, provided the tasks and cognitive demands are seen as relevant to their affective needs. Therefore any teaching-learning episode is an inextricable mix of both dimensions. Cognitive psychology has indicated that in all likelihood cognitive organization, development, and growth are founded on a search for meaning which is rooted in affect. Each forward cognitive movement throughout life has inseparable affective elements. These conclusions by cognitive psychologists contain obvious implications for the educational establishment.

A good learning environment cannot focus on only one facet. Soar (1967) found that various affective styles of teachers related to pupil growth in reading and vocabulary. Schaefer (1969) reported maternal affective behavior as being predictive of IQ performance at age three. Schaefer and Soar both focused on the same element - the affective behavior of significant adults in the

child's environment, mother and teacher - and came to a common conclusion. Specifically, adult behavior which was hostile and/or aloof produced deleterious effects on the child's cognitive development. Wattenberg (1962) and Lamy (1965) reported perception of self as the primary predictor of beginning reading achievement. Quant's (1972) interpretive paper summarizes the findings of other researchers and concludes that a child's reaction to learning experiences are based more on the views that significant adults appear to hold than on his success or failure on the tasks themselves. "From a very early age the child learns two concepts from such reactions: how competent he is . . . and how valuable he is as an individual (p. 8)."

Strang (1969), in analyzing the action of the fifty-four factors involved in Homes and Singer's report on reading speed and power, deduced that the missing twenty-four percent of variance could be accounted for as the "intangibles of values and ideals". Burton (1971, pp. 62-63) suggests a hierarchy of five question types that would incorporate this missing twenty-four percent into literature lessons. These questions are:

1. Those that are factual.
2. Those that require students to prove or disprove generalizations made by others.
3. Those that require students to derive their own

generalizations.

4. Those that relate a specific work to the total human experience.

5. Those that cause students to relate the derived generalizations into their own lives.

Researchers in reading education have not been alone in acknowledging the existence of a relation between affect and cognition. Social studies specialists have also been cognizant of the reciprocal relationships. Hunkins and Spears' (1973) position paper for the Association of Curriculum Development and Supervision states:

> To make the social sciences the sole basis of citizenship education is to place values and the valuing process outside the pale of social education, since the social sciences are value free; they are not concerned with how people make social judgments. The concern has been to describe social behavior at a given place and time - a useful enough addition to the stable of intelligences of the citizen but hardly an adequate one (p. 3).
>
> The extent to which the content of the social studies will be useful will depend upon redefinition of rationality as a comprehensive act of thining, feeling, valuing, and doing . . .
>
> Translated into day-to-day practices in the schools, it means fostering growth toward greater self-definition, clarification of identity, and response to one's inner self . . .
>
> The practice of separating the emotional from the intellectual, and the societal from the individual is fallacious and leads to a loss of control by man over his own behavior. Man victimizes himself by emphasizing the emotional, the intellectual, the social, or the individual to the neglect of any of the others (pp. 7-8).

Therefore, Hunkins and Spears conclude, basic purposes for social studies must include socialization, decision making processes, values and valuing, and citizenship in addition to knowledge acquisition (p. 4). Obviously, any educational program constructed within these parameters would have to give ample consideration to affective and cognitive elements and to the reciprocal relation between them.

A major problem in reconstructing the curriculum in any given subject area is the determination of the initial approach to coordinated educational experiences - affectively or cognitively. According to Bloom (1973), if all cognitive entry behaviors to a specific learning task are equal in a given group, achievement would still show fifty percent of the variance of another group in which the cognitive entry behaviors had varied widely. Affective entry behaviors to new tasks are ". . . a compound of interests and attitudes . . . and more deep seated self-concepts and personality characteristics (p. 132)." Bloom feels that while a learner can achieve mastery with negative affectivity, it is very difficult. A review of past research led him to propose that affect might account for up to twenty-five percent of the variation in achievement, and the combined effect of both cognitive and affective entry behavior would account for sixty-five percent of the vari-

ance. When the cognitive and affective entry behavior were added to the "quality of instruction", which includes teachers' cues, learner activity, and reinforcement, Bloom concluded that ninety percent of all variation in school achievement would be accounted for.

Sears and Sherman's (1964) model depicting linkages between cognitive and affective variables demonstrates how these linkages function in both directions. The entry point, therefore, to any learning task for students can be along either the affective or cognitive dimension. Regardless of which dimension functions as entry to the learning task, the other must be brought into play and function throughout the learning.

Educators have traditionally emphasized development of the cognitive capacities of their students. They have been prepared to do this and with little effort they can do it efficiently. The affective capabilities of the student have been either neglected or left to the child or his family or to chance. "All too often, chance prevails, and the result becomes a half-man, who like his teachers, has been educated, at best, to function effectively only on the intellectual plane (Lyons, 1971, p. 18)."

> It would be well to observe at this point, that in a healthy curriculum there is simultaneous interplay between cognition and affect. If they are treated as separate entities . . . the goal we seek will elude us.

> The point here is that by adding an affective dimension to the present cognitively oriented curriculum . . . we can enhance learning, infuse schooling with a new kind of life and zest, improve motivation, and greatly enrich the academic areas under study. Conversely, by bringing children's authentic feelings into the open and by making them a basis for cognitive exploration and understanding, we can help the student to deal with the pervasive and overriding concerns with which he must now struggle on his own - his emotional liabilities and the attitudes of mind that undermine his behavior (Rubin, 1973, pp. 17-18).

The emphasis on cognitive learning in the classrooms and the fact that this emphasis is controlled by the teacher is apparent in Adams and Biddle's (1969) study of first, sixth, and eleventh grade classes. Teachers dominated eighty-four percent of the classroom communication, and less that one half of one percent of the verbal episodes was spent in discussion of feelings and interpersonal relations. Eisner (1973), in directing attention to our present conception of intellect, which is preponderately associated with verbalisms, asks that educators consider a different concept of intelligence - one that provides links between the words, and the thoughts, and the feelings they symbolize.

However, merely giving consideration to a changed concept of intellectual activity is not enough for teachers to become effective in integrating the cognitive and affective domains. "No one can give what he does not have: a faculty of one dimensional men cannot teach round-

ing youngsters how to be properly round (Lyon, 1971, p. 19)." Preservice training, and indeed the entire schooling of teachers, has given no preparation for developing activities that are confluent in nature. Tyler (1973) indicates that such change in classroom planning necessitates

> . . . the acquisition of new attitudes, knowledge, and skills on the part of the person involved. To acquire them inservice education . . . furnishing opportunities for teachers to develop new skills that are widely usable . . . is necessary (pp. 47-48).

In discussing the retraining of teachers so that they can be instrumental in changing the "joyless" atmosphere prevalent in schools today, Jones cautions,

> We can choose to strive for cognitive and affective growth in clumsy and inept ways - or we can develop respectable techniques that have reasonable potency. In this regard it would seem that because teaching that successfully integrates facts and feelings is still in its infancy, our greatest need is to invent a repertory of methods with which to integrate both domains (1971, p. 190).

Summary

The literature relating to inservice education has led to the conclusion that although it is ubiquitous and diversified, it is not effective. Replicable research is rarely reported due to variability of the human factors involved. In spite of individually reported successes, the local nature of the projects and the lack of detail makes transferability of the findings unfeasible. Al-

though the one-exposure workshop conducted by outside consultants is frequently the major portion of inservice programming, neither the format nor the methods used have been researched.

Characteristics of teachers (personality, age, experience, and social origin) are human factors which cause past projects to be non-replicable. These personal factors cause variation in the effects of a given inservice program. However, different researchers report different directions in the influence of these characteristics on the learnings to be acquired. Yet, it is apparent that these personal factors do affect, in some way, day-to-day classroom functioning and also affect the outcomes of in-service efforts to effect changes in that day-to-day functioning.

The major portion of the teaching activity in classrooms is questioning. It is a fertile field for the introduction of change since most questioning is at low cognitive levels and affective questioning is rare. Past research has indicated that positive change in teacher questioning in both domains can be instituted through inservice education.

In fact, the reciprocal relationship of affect and cognition hints at the viability of improving questioning in both domains and that it should be instituted through

inservice education.

In fact, the reciprocal relationship of affect and cognition hints at the viability of improving questioning strategies in both domains simultaneously by relating the affective elements to higher level questioning in the content areas of the ongoing curriculum and by using values questions to develop cognitive concepts. To date, no studies have been reported that used this approach.

The present study and the companion study have been designed to examine and draw conclusions as to appropriate methodologies for one-exposure workshops designed to improve questioning strategies in the affective and cognitive domains by stressing the interaction of cognitive and affective activities within the context of the on-going curriculum. The procedures used are explained in the next section.

CHAPTER III

Research Design

A modified version of Campbell and Stanley's (Van Dalen, 1969) pretest, posttest, control group design was used in this study. The study was divided into two major segments. The first part was concerned with developing an approach to one-exposure inservice workshops. The second part was devoted to the collection of data to evaluate the effectiveness of this approach.

Development of Workshop Approaches

Workshop A

It is recommended in the Illinois school law code, that school districts allocate five days for teacher inservice education. Based on this recommendation, the researcher assumed the following:

1. School districts conducted inservice education programs.
2. A methodology for planning these programs existed.

Suburban Chicago administrators and/or curriculum directors were contacted and asked to indicate their usual procedure

for organizing their inservice days. From these procedures, Workshop Approach A, the traditional approach, as defined in Chapter One was developed.

Workshop B

Using findings from the review of the literature on inservice education, Workshop Approach B, operationally defined in Chapter One as the experimental approach, was developed, taking into account the suggestions of experts. It was assumed that these suggestions were valid, based on the experts' experiences in the field of inservice education.

Workshop C

This approach served as the experiment's control, fulfilling the requirements of the research design.

These workshop approaches constituted the study's independent variable. Experimental Approach B involved the cooperation of the workshop consultants and this requirement was fulfilled through the coordination of this study with the research of King (1974). Both researchers (King/Weiss) functioned as the consultants for the one-exposure inservice workshops.

Choice of the Population

Two similar west suburban Chicago school districts, identified by their willingness to participate, were utilized in the study. Similarity of districts was assumed based on the socio-economic status of their communities, number of schools, and staff size. One district was randomly selected by a coin toss to serve as a pilot for the study and the other district provided the study sample. The pilot district was used to field test a questionnaire, to establish timing of the workshop topics, and to provide tapes of classroom verbal interactions for the training of the study's raters. Anonymity was guaranteed to both the districts and to the participants of this study. This was done in order to insure district cooperation and to provide the subjects with the freedom to respond honestly to the study's instruments.

Assignment of Workshop Approaches

The district involved in the study was composed of seven schools and the total teaching staff was scheduled to take part in an inservice workshop. To avoid the contamination of data resulting from possible teacher interactions, it was necessary to insure that all teachers working in the same building received the same workshop

approach. Treatment was randomly assigned to a school's faculty by placing the names of the schools in one container, and the workshop approaches in another container. Two schools were drawn for each treatment. The remaining school was added to treatment C.

TABLE I
Assignment of faculties to workshop approaches

School	Workshop Approach
1 , 4	A - traditional approach
2 , 3	B - experimental approach
5 , 7 , 6	C - control group

Selection of the Workshop Topic

Higher level cognitive questioning was chosen by the researcher and approved by the district superintendent as the workshop topic. This choice was based upon the need for empirical investigations relating to questioning and comparisons of workshop approaches as well as the current emphasis in education on developing the higher level cognitive processes of students.

It was assumed and verified in the literature that the ability to ask these questions was an area of teacher education which showed neglect and hence the topic would

be ideal for an inservice presentation. It was also assumed that the ability to ask higher level cognitive questions was a technical skill which could be developed through an inservice workshop.

The higher level cognitive questions as used in this study were defined according to the Barrett Taxonomy. Barrett's taxonomy has not been published under his name but was included in the first chapter of the 1968 National Society for the Study of Education Yearbook, edited by Helen M. Robinson. Theodore Clymer, who wrote the chapter, introduced the taxonomy by saying that it is manageable and understandable. Its major divisions and the comprehension tasks within them are ordered to move from the easy to the difficult. The tasks are also cumulative insofar as performance at any given level utilizes all previous levels. This taxonomy was chosen for the following reasons:

1. It is comprehensive. It was based on a synthesis of the Bloom, Guilford, Guzak, and Sanders taxonomies.
2. Its major divisions and the levels within them are hierarchically sequenced according to levels of cognitive difficulty. Each thinking task implements all of the preceding thinking tasks.

3. It is, as Clymer stated, "manageable and understandable."

The taxonomy in outline form is as follows:

TABLE 2

The Barrett Taxonomy of Cognitive and Affective Dimensions of Reading Comprehension

1.0 Literal Comprehension
- 1.1 Recognition
  - 1.11 Recognition of Details
  - 1.12 Recognition of Main Ideas
  - 1.13 Recognition of a Sequence
  - 1.14 Recognition of Comparison
  - 1.15 Recognition of Cause and Effect Relationships
  - 1.16 Recognition of Character Traits
- 1.2 Recall
  - 1.21 Recall of Details
  - 1.22 Recall of Main Ideas
  - 1.23 Recall of a Sequence
  - 1.24 Recall of Comparisons
  - 1.25 Recall of Cause and Effect Relationships
  - 1.26 Recall of Character Traits

2.0 Reorganization
- 2.1 Classifying
- 2.2 Outlining
- 2.3 Summarizing
- 2.4 Synthesizing

3.0 Inferential Comprehension
- 3.1 Inferring Supporting Details
- 3.2 Inferring Main Ideas
- 3.3 Inferring Sequence
- 3.4 Inferring Comparisons
- 3.5 Inferring Cause and Effect Relationships
- 3.6 Inferring Character Traits
- 3.7 Predicting Outcomes
- 3.8 Interpreting Figurative Language

4.0 Evaluation
- 4.1 Judgments of Reality or Fantasy
- 4.2 Judgments of Fact or Opinion
- 4.3 Judgments of Adequacy and Validity
- 4.4 Judgments of Appropriateness
- 4.5 Judgments of Worth, Desirability, and Acceptability

5.0 Appreciation
- 5.1 Emotional Response to the Content
- 5.2 Identification with Characters or Incidents
- 5.3 Reactions to the Author's Use of Language
- 5.4 Imagery

The complete taxonomy accompanied by definitions and examples for each category has been placed in Appendix A. The taxonomy in the elaborated form was used by the raters to identify the questions in this study. The higher level cognitive questions (3.0 - 5.0) constituted the study's dependent variable.

Implementation of the Experimental Methodology - Approach B

It was assumed from the literature that by becoming familiar with a district's curriculum, teaching methodologies, organizational structure, and needs as identified by that district's personnel, an inservice workshop could be designed which would result in teacher growth. After the pretest tapes were collected, the experimenter-consultant met with the district superintendent, director of inservice, and six teacher-representatives from schools 2 and 3.

A brief lecturette, focusing on the importance of developing the higher level cognitive processes of youth and the question method as a tool for implementing this development, was presented to the group. A brainstorming

session was then held on the questions "What do you feel you would have to know in order to use higher level cognitive questions in your classroom?" The groups' responses to the question identified the district's needs in terms of the topic. These responses are listed in Appendix B.

Copies of the district's texts and curriculum guides were collected. Information on the district's goals, educational philosophy, organization, and teaching methodologies was obtained through informal interviews with district personnel. Using the ERIE (Ritz, 1970) model as a guide, the inservice workshop format was designed. This format is described in Appendix C.

The inservice format was submitted to and approved by the district's inservice education committee followed by a meeting of the researcher with the experimenter/consultant of the companion study to coordinate and interrelate the workshop presentations. These presentations were field-tested in the pilot district to establish timing. Each consultant was allowed one and a half hours of presentation time.

For the experiment, two sessions based on higher level cognitive questions were conducted. The faculties of schools 1 and 4 attended the morning session and received workshop Approach A. The faculties of schools 2 and 3 attended the afternoon session and received work-

shop Approach B. The faculties of schools 5, 7, and 6 were not given a session on higher level cognitive questions but were given a workshop on an unrelated topic by other consultants. They constituted the no-treatment control group.

In brief, there were two major differences between the sessions. During the afternoon session, the workshop consultants:

1. Worked together by interrelating their topics.
2. The participants were given concrete applications of the topics to their own classroom materials.

The workshop plans followed by the researcher for each session have been placed in Appendix D.

Selection of the Sample

Participants for this study were solicited by the district's administrators. This was done to avoid biasing the study through the participants associating the pre/post treatment data with the researcher and the inservice workshop.

The principal of each school informed his staff that the district was cooperating in an education research project. He extended an invitation to all classroom teach-

ers to participate in the research. They were told that participation would involve the completion of some personal data forms and the taping of two classroom lessons. Anonymity from the researcher and from the district was guaranteed to those willing to participate. To satisfy the condition of anonymity, code names (states and countries) were assigned to the schools for each of their participants. These participants constituted the pool from which the study's sample was drawn (Table 3). From a total population of one hundred and forty-five elementary school teachers, sixty-eight teachers volunteered to take part in the study. The volunteers were grouped according to the workshop approach assigned to their school (Table 4). Upon completion of the pre and post treatment data and the inservice workshops, ten teachers from each treatment group were randomly selected to serve as the sample. Ten subjects were chosen per treatment as adequate representatives of the population for the following reasons (Hays, 1963):

1. A smaller number of subjects could introduce an unstable variance estimate.
2. A larger number of subjects could cause the statistical test to pick up possible trivial differences not related to the hypotheses being tested.

TABLE 3
Assignment of Code Names

School # and Workshop Approach	Number of Volunteers	States/Countries
1 (A)	11	Alabama, Delaware, Iowa, Michigan New Hampshire, Oklahoma, Texas, Wyoming, Connecticut, Indiana, Massachusetts
2 (B)	10	Alaska, Florida, Kansas, Minnesota, New Hersey, Oregon, Utah, Nevada, Ohio, Tennessee
3 (B)	12	Arizona, Georgia, Kentucky, Mississippi, New Mexico, Pennsylvania, Vermont, Wisconsin, Colorado, Illinois, Maryland, Nebraska
4 (A)	9	Arkansas, Hawaii, Louisiana, Missouri, New York, Rhode Island, Virginia, North Dakota, South Dakota
5 (C)	8	California, Idaho, Maine, Montana, North Carolina, South Carolina, Washington, West Virginia
6 (C)	9	Puerto Rico, District of Columbia, Poland, France, Hungary, India, Australia, Iceland, Yugoslavia
7 (C)	9	Greenland, Chile, England, Germany, Israel, Bohemia, Sweden, Finland, Ireland

TABLE 4

School	Workshop Approach	Total volunteers
1 and 4	A (traditional)	20
2 and 3	B (experimental)	22
5 and 7 and 6	C (control)	26

The study sample was representative of the population from which it was drawn by virtue of its sharing the following characteristics with the total population:

1. All possessed Illinois State Teaching credentials.
2. All were elementary school teachers.
3. All chose to apply to the same district for employment.
4. All were employed by the same district.
5. All were given the same opportunity to participate in the research with no indication of the specifics being examined.

Data Collection

Instruments

Three instruments, the Myers-Briggs Type Indicator (1962), the Heslin-Blake Involvement Inventory, and a questionnaire, were administered prior to the inservice workshop. These instruments served to provide necessary data on the study's co-variables: personality, age, years of teaching experience, and social origin. The co-variables had been identified through a review of the literature on teacher characteristics.

The Myers-Briggs Type Indicator was utilized for

the collection of personality data. According to its author:

> The purpose of the indicator is to implement Jung's theory of type. The indicator aims to ascertain people's basic preferences in regard to perception and judgment. The indicator contains separate indices for determining each of the four basic preferences, which under this theory, structure the individual's personality (Myers, 1962, p. 1).

These indices may be summarized as follows:

Index	Preference as between
EI	Extraversion or introversion
SN	Sensing or intuition
TF	Thinking or feeling
JP	Judgment or perception

The type indicator yields four scores (sixteen possible combinations). The reliability coefficient on the indices ranges from 0.71 to 0.94 using the split-half method and the indicator has been positively correlated with the following instruments to ascertain concurrent validity:

1. Gray-Wheelright Psychological Type Questionnaire
2. Strong Vocational Interest Blank
3. Allport-Vernon-Lindzey Study of Values
4. Edwards Personal Preference Blank
5. Personality Research Inventory

A description of the indices, and the reliability of validity figures have been placed in Appendix E.

The Heslin-Blake Involvement Inventory was chosen to identify behavior types. According to its authors (Jones & Pfeiffer, 1973, p. 87)

> The Involvement Inventory is based on a philosophy that three important phenomena in life with which a person must interact: 1) people, 2) objects, and 3) ideas.
>
> . . . in summary, the Involvement Inventory measures three characteristics of people:
>
> (A) Affective, or feeling involvement with people,
> (B) Behavioral involvement in accomplishing tasks,
> (C) Cognitive involvement with analyzing pronouncements encountered.

The test consists of the above three scales. The ABC scales taken together represent a generally active involvement in and orientation toward life.

> A low scorer on the A scale tends to be affectively passive, emotionally controlled, and interpersonally cautious. A low scorer on the B scale tends to be a follower, finds it difficult to plan ahead, and finds doing projects distasteful. A person who scores low on the C scale tends to be accepting of information he receives, uninterested or unwilling to challenge information that comes to him and willing to believe pronouncements of others (p. 88).

The Involvement Inventory has been subjected to extensive testing and refinement. Test reliability of the form used in this study is:

Scale A = 0.76
Scale B = 0.78
Scale C = 0.76
TOTAL = 0.78

Test validity according to correlation among the scales is:

A-B	0.37
A-C	0.18
B-C	0.49
AVERAGE	0.34

These correlations indicate moderate overlap in content. The scores reported in Appendix H for the sample population can be interpreted in relation to the published median scores for the norming groups.

	Median	$Q_1 - Q_3$
Affective	116	107 - 122
Behavioral	100	88 - 109
Cognitive	86	78 - 92
TOTAL	300	289 - 320

A questionnaire was constructed by the researcher to collect the following information: age, number of years of teaching experience, and social origin. Objective type items were utilized in order to facilitate completion of the instrument, tabulation, and analyses of the responses. Loyola University School of Education's questionnaire form was used as a guide in designing the questionnaire which was field-tested in the pilot district and found acceptable as described for the collection of the necessary data.

Procedure

Three months prior to the inservice workshop, envelopes containing the following materials were prepared and distributed to the participants by the district administration. Samples have been placed in Appendix F.

1. Letter of instruction
2. Myers-Briggs Type Indicator
3. Heslin-Blake Involvement Inventory
4. Questionnaire
5. Blank tape
6. Code name

Only the participants knew which of the assigned code names they had received. The participants were directed to complete the enclosed forms and to tape a discussion lesson. No attempt was made to indicate that the cognitive questioning process was to be evaluated but the importance of planning for verbal interaction between studnet and teacher was suggested. It was recommended that reading, social studies, or science be used as the subject areas for the taping. After the inservice workshop, a second tape was distributed to the participants and a second taping was made by the participants. The classroom interactions as recorded on the tapes were an important source of data. The first tape provided the pretreatment measure, and the second tape provided the post-

treatment measure of the actual frequency of higher level cognitive questions expressed by the participants. It was assumed that the frequency of higher level cognitive questions would be approximately the same for all treatment groups on the pre-treatment tapes. Further, these frequencies would be comparable to the data revealed in the analyses of the control group's post-treatment tapes.

In addition, the researcher assumed that for significant change to take place in the frequency of higher level cognitive questions expressed exposure to the experimental Workshop Approach B would be needed. There would be few or no differences between the participants' use of higher level cognitive questions if exposure to the experimental Workshop Approach B did not take place.

The Raters

Three elementary school teachers from non-participating school districts rated the subjects' tapes. They were trained to identify higher level cognitive questions by practicing on tapes from the pilot district. Each of the raters independently evaluated the tapes involved in the study. These tapes were coded accordingly:

Pre-tape - school number
teacher code name

Post-tape - school number
teacher code name

Interrater reliability was established through application of Kendall's Coefficient of Concordance to indicate the degree of association between the rankings of the three raters. The Coefficient of Concordance "W" expresses the average agreement of the raters on a scale from .00 to 1.00 (Meredith, 1967, p. 289). The data was arranged in an N by k table, where the N rows corresponded to N object (questions), the k columns corresponded to the raters. The entries in each column consisted of each rater's ranking of the questions. "W" is then expressed as the ratio between the between-groups (or ranks) sum of squares, and the total sum of squares of a complete analysis of variance of the ranks. Kendall's Coefficient of Concordance is defined by:

$$W = \frac{12\ S}{k^2\ (N^3-N)}$$

"S" is the sum of the deviations squared of the totals of the "N" ranks from their mean. It is a between-groups sum of squares for ranks. In case of ties in rankings, the median or mean of the ties is used (Ward, 1970)

Hypotheses Tested

The following null hypotheses were tested in this study:

1. There is no significant difference between workshop approach and the increase in the number of higher level cognitive questions asked by the subjects.
2. There is no significant relationship between the frequency of higher level cognitive questions asked and the selected personality factors of the subjects.
3. There is no significant relationship between the frequency of higher level cognitive questions asked and the age of the subjects.
4. There is no significant relationship between the frequency of higher level cognitive questions asked and the years of teaching experience of the subjects.
5. There is no significant relationship between the frequency of higher level cognitive questions asked and the social origin of the subjects.

6. There is no significant relationship between change in the frequency of higher level cognitive questions asked and the frequency of values-clarifying questions asked.

Analytical Techniques

The following statistical procedures were utilized in this study: 1) single classification analysis of variance, 2) Tukey's post-hoc comparisons, and 3) Pearson's product-moment coefficient of correlation.

The statistical models and the hypotheses to which they were applied are summarized in Table 5.

TABLE 5

Hypothesis	Statistical Model
1	Single classification analysis of variance and Tukey's post-hoc comparisons.
2	Pearson's product-moment coefficient of correlation
3	Pearson's product-moment coefficient of correlation
4	Pearson's product-moment coefficient of correlation
5	Pearson's product-moment coefficient of correlation
6	Pearson's product-moment coefficient of correlation

Hypothesis 1

The subjects' pre and post treatment tapes were analyzed by the raters and the number of higher level cognitive questions expressed by the subjects were counted. Difference scores were then computed for each subject between the first and second measure. These scores were analyzed according to a single classification analysis of variance. The analysis of variance model was chosen because, according to Hill and Kerber

> The technique of analysis of variance, which employs the F-distribution, is one of the best means for effecting tests of the hypotheses that: a) two population variances are equal, and b) that k population means are equal (1967, p. 358).

This study's major hypothesis assumed that the three population means were equal.

Analysis of variance deals with composite tests of significance. The basic principle of such a test is to determine if the sample statistic varies further from the population parameter than one would expect, in view of the variations of single cases from the same mean (Guilford, 1965). Generally, these tests consist of a comparison of two independent estimates of the universe variance by means of the F-distribution.

The rationale upon which analysis of variance is based is

> . . . that the total sum of squares of a set of observations resulting from combining the observations for several groups can be analyzed into specific parts, each of which is identifiable with a given source of variation (Hill & Kerber, 1967, p. 358).

The basic assumptions underlying this technique are as follows:

1. The samples, composing the total set of observations, were random ones.
2. These samples were drawn from a normal population.
3. The values of the two independent estimates of the universe variance differ only within the limits of random sampling error (Hill & Kerber, 1967).

In analysis of variance of a single classification, as was the case of this study, the data were differentiated on the basis of only one experimental variation (Workshop Approach) with two observations within each class (pre/post tapings). The total sum of squares for all the data were then analyzed into two parts: a sum of squares for the variation within the groups, and the sum of squares based upon the variation between the group means. From these two sums of squares, independent estimates of the population variance, represented by $\hat{G}_1^2$ and $\hat{G}_2^2$, were calculated (Hill & Kerber, 1967).

The variation among column means was obtained by the expression:

$$\sum_{1}^{kc} [N_c (\bar{x}_c - \bar{\bar{x}})^2]$$

where $\sum_{1}^{kc}$ represents the summation over the kc columns, N_c the number of items, $\bar{x}_c$ the mean of a given column, and $\bar{\bar{x}}$ the grand (overall) mean of the entire distribution (Parl, 1967). This expression represents the variation - the sum of the squared deviations of the subjects from the arithmetic mean.

The estimated variance of the universe, $\hat{G}_1^2$, was obtained by dividing the computed variation by the appropriate number of degrees of freedom, $(n_1 - k)$. In this study the variation was measured by three column means with one restriction represented by $\bar{\bar{x}}$ (grand mean) of the sample, the number of degrees of freedom then was $(n_1 - k) = (3 - 1) = 2$.

The second estimate of the universe variance, $\hat{G}_2^2$, was obtained by determining the variation found within the columns, and dividing by the appropriate number of degrees of freedom $(N - k)$.

The second variation was obtained by the expression:

$$\sum_{1}^{kc} \left[\sum_{1}^{N_c} (x - \bar{x}_c)^2 \right]$$

According to this formula, the squared differences of individual items from their respective column means are summed for the N_c columns (Parl, 1967). The appropriate number of degrees of freedom was determined by taking the difference of thirty subjects (N) from the three sample means:

$$df = (N - k) = (30 - 3) = 27$$

Upon determination of the two independent estimates of the population variance, $\hat{G}_1^2$ and $\hat{G}_2^2$, the study's first null hypothesis was tested by the F-ratio where

$$F = \frac{\hat{G}_1^2}{\hat{G}_2^2} \quad \text{for} \quad \begin{matrix} n_1 = 2 \\ n_2 = 27 \end{matrix}$$

The F table was then entered to determine if this null hypothesis should be accepted or rejected at the 0.05 confidence level.

A significant F tells one that there are non-chance variations somewhere in the list of sets. It indicates that there exists a significant difference between the class means (Guilford, 1965). It does not indicate however, where the significance lies.

In order to determine where the significance lay, post-hoc comparisons were utilized. According to Hays:

> Even though tests for planned comparisons form a useful technique in experimentation, it is far more common for the experimenter to have no special questions to begin with. His initial concern is to establish only that some real effects or comparison differences do exist in his data. Given a significant overall test, his task then is to explore the data to find the source of these effects and to try to explain their meaning.
>
> . . . If the experimenter has found evidence for overall significance among his experimental groups, he may use the method of post-hoc comparisons to evaluate any interesting comparisons among means (Hays, 1963, p. 483).

In order to utilize post-hoc comparisons, the following restriction must be met: a preliminary analysis of variance and F-test must have shown overall significance. This study fulfills this condition.

After the overall F has been found significant, then any comparison may be made.

> Unlike planned comparisons, there is no requirement that such post-hoc comparisons be independent . . . any comparison is legitimate (Hays, 1963, p. 484).

Tukey's method was chosen for testing the significance of the post-hoc comparisons. According to Meyers (1966), if the n's are equal, and if the normality and homogeneity of variance assumptions appear reasonable, the Tukey approach provides a powerful test for contrasts of the type, uj - uj[1]. Tukey's procedure is recommended for use when the experimenter is interested only in comparing two means at a time, as is the case in this study.

> Tukey's multiple comparison method
>
> . . . is based on the distribution of q, the studentized range. This distribution is defined by first taking the range (R) for a set of a independent, normally distributed values. R is then divided by S, the estimate of the standard deviation of the values whose range is being considered. The sampling distribution of q is the sampling distribution of R/S and depends upon a (the number of values ranged over) and upon the df associated with S. Assuming a completely randomized one-factor design and assuming that the estimates of the treatment population means are independent and normally distributed and have homogeneous variances, the probability is 1 - α

that:

$$\hat{\psi}p - qS\bar{y} \left(\tfrac{1}{2} \sum_j |Wjp|\right) \leq \hat{\psi}p \leq \hat{\psi}p + qS\bar{y} \left(\tfrac{1}{2} \sum_j |Wjp|\right)$$

for all values of p (i.e., for all possible contrasts), where $q = q\alpha$; a, $a(n-1)$, the q required for significance at the α level when there are a means within the range and the error df are $a(n-1)$, $S\bar{y} = \sqrt{MS_{S/A} / n}$ and $|Wjp|$ if the absolute value of the j th weight for the p th contrast. To test the null hypothesis that $\psi = 0$, we note whether

$$\hat{\psi} > S\bar{y} \left(\tfrac{1}{2} \sum_j |Wj|\right) q$$

(Myers, 1966, pp. 334-335).

Hypotheses 2, 3, 4 & 5

To further analyze the data comparisons between the difference scores and the study's co-variables - personality, age, years of teaching experience, and social origin - were made by means of Person's product-moment coefficient of correlation.

Statistical correlation refers to the average amount of relationship between two variables that can be quantified. The situation in which statistical correlation is applicable is always one in which there is a pair of measures for each subject, as is the case in this study, or one set of data for related subjects (Tate, 1965).

> The most widely used and best measure of correlation is the product-moment coefficient, developed by the English statistician Karl Pearson, about 1900 (Tate, 1965, p. 129).
>
> Pearson's product-moment coefficient of correlation, designated by rxy between variables independent of size of the sample and the units of measurement, can be determined by dividing the mean product of the paired deviation scores by the standard deviations of the scores (Tate, 1965, p. 134).

This procedure is summarized as follows:

$$rxy = \frac{\Sigma\, xy}{N\, G_x\, G_y}$$

Since $$G_x = \sqrt{\frac{x^2}{N}}$$

$$G_y = \sqrt{\frac{y^2}{N}}$$

the basic formula may also be expressed as:

$$rxy = \frac{\Sigma\, xy}{\sqrt{(\Sigma\, x^2)\ (\Sigma\, y^2)}}$$

(Tate, 1965, p. 134).

The value of rxy varies between zero, for no correlation, and one, for perfect correlation. A positive or negative sign may be attached to r to indicate the existence of a positive or negative linear relationship (Parl, 1967). The larger the |r| , the stronger the relationship.

The assumptions underlying rxy are as follows (Tate, 1965):

1) rectrolinear regression
2) normality of distribution
3) homoscedasticity
4) continuous data

Hypothesis 6

Finally, difference scores from a companion study, (King, 1974), were utilized to determine, using rxy, if a relationship between change in cognitive questioning behavior and change in values-clarifying questioning behavior existed for each treatment level.

Summary

The inservice workshop approaches in this study were defined in terms of 1) actual inservice methodologies as practiced by suburban administrators and 2) the recommendations of experts in the field of inservice education.

The thirty subjects in this study were randomly selected from among sixty-eight suburban elementary school teachers who volunteered to participate in an education research project.

The instruments used to assess the personality characteristics of the subjects were the Myers-Briggs Type Indicator and the Heslin-Blake Total Involvement Inventory.

A questionnaire, designed and field-tested by the experimenter, was utilized to collect information on the age, years of teaching experience, and the social origin of the subjects.

Two tapings, pre-inservice workshop/post-inservice workshop, were made of the subjects' verbal classroom behavior. Each tape was analyzed for the number of higher level cognitive questions expressed by the subject.

Single classification analysis of variance, Tukey's post-hoc comparisons, and Pearson's product-moment coefficient of correlation were used to analyze

the data. These statistical models were chosen because the assumptions underlying their use were met and they were representative of powerful and effective statistical tools.

The hypotheses were tested, and the analysis of the results is discussed in the following chapter.

CHAPTER IV

Results of the Study

The data generated by the study were analyzed following the procedures described in Chapter III. The findings are presented in the same sequence.

Rater Reliability

The raters were trained by the experimenter to classify the questions on tapes of classroom interaction according to the Barrett Taxonomy using tapes made by teachers in the pilot district. To establish reliability between raters, Kendall's Coefficient of Concordance was applied to the rankings done by the raters and by the trainer to the same fifteen minute tape segments. The classification figures and rankings are presented in Appendix G. The category chosen to be ranked as representative of the question classifying was the total number of questions asked.

By applying the figures presented in Table 6 to Kendall's formula, the degree of concordance (W) between raters was established.

TABLE 6

Rankings of Tapes by Raters

Tape #	Rater A Ranking	Rater B Ranking	Rater C Ranking	Trainer Ranking	Sum of Ranks
1	4	4.5	3.5	2	14.0
2	4	4.5	3.5	3.5	16.5
3	8	7	8.5	10	33.5
4	10	9.5	10	8.5	38.0
5	6	6	6.5	6	24.5
6	4	2.5	3.5	5	15.0
7	8	9.5	8.5	7	33.0
8	1	1	1	1	4.0
9	8	8	6.5	8.5	31.0
10	2	2.5	3.5	3.5	11.5

$W = 0.9227$

This coefficient of concordance (0.92) established the rater reliability as highly acceptable.

Once the reliability of the raters was established, analysis of the experimental data (Appendix H) was done. The raw data presented include the information gathered for this study as well as that collected for the companion study (King, 1974). This was necessitated by Hypothesis 6

which sought to determine if a relationship existed between change in cognitive questioning and change in values-clarifying questioning as a result of the workshop approaches. Coordination of the data collection for both studies also reduced the number of chores required of the subjects. The data collected from the subjects directly, and from their pre and post tapes, were coded and transferred to punched cards for the reamining statistical analyses. These were done at the Loyola University computer center on the IBM 360-65 computer. An ANOVA design from the Bio-Med package, developed at the University of California at Los Angeles, revised in January, 1972 was used. The findings are as follows:

Hypothesis 1

There is no significant difference between workshop approaches A, B, or C and the number of higher level questions asked by the subjects.

This hypothesis was rejected at the .05 significance level since the F-ratio was above 3.35 as seen in Table 7.

The finding of significance required the use of Tukey's formula for post-hoc comparison to determine where the significance lay (Myers, 1966).

TABLE 7

Analysis of Variance for Higher Level Questions

Treatment Group	A	B	C
Sample Size	10	10	10
Mean	3.4000	7.6000	-1.3000
Standard Deviation	3.9777	6.0773	9.7531

	Sum of Squares	DF	Mean Square	F-ratio
Between Groups	396.4661	2	198.2330	4.0216 *
Within Groups	1330.8982	27	49.2925	
TOTAL	1727.3643	29		

* $p > .05$

From the treatment group means, the actual differences were computed.

A - B	4.2
B - C	6.3
A - C	2.1

Tukey's formula was then applied to determine the critical difference (CD) necessary for significance. The computations resulted in a CD of 2.44 which indicates the signi-

ficance lay between treatments A and B, and between B and C. The difference between A and C was not significant. This established the experimental condition (B) as being the source of significance. In sum, the experimental group showed significantly greater growth than the traditional group (A) and the control group (C). The traditional group showed more growth than the control group, but not as much as the experimental. Finally the control group was not superior to either of the other groups.

In addition to the ANOVA for higher level questions, an ANOVA was done for low level questions (Table 8) to further verify the findings since the raw data (Appendix H) show that change occurred in this category also. The ANOVA for low level questions determined that the change at this level was not significant although all groups asked fewer low level questions on the post measures.

Finally, examination of the raw data revealed variation in the total number of questions asked between the pre and post measures. Therefore, an ANOVA was done for the total number of questions as well (Table 9). While all the differences were negative (fewer questions were asked on the post measure) the differences between treatment groups were not significant.

TABLE 8

Analysis of Variance for Low Level Questions

Treatment Group	A	B	C
Sample Size	10	10	10
Mean	-9.6000	-16.6000	-7.5000
S.D.	13.9857	17.7589	11.9373

	Sum of Squares	DF	Mean Square	F-ratio
Between Groups	454.0652	2	227.0326	1.0423 *
Within Groups	5881.2969	27	217.8258	
TOTAL	6335.3594	29		* not significant

TABLE 9

Analysis of Variance for Total Number of Questions

Treatment Group	A	B	C
Sample Size	10	10	10
Mean	-6.4000	-4.2000	-7.000
S.D.	14.5235	16.0817	17.6005

	Sum of Squares	DF	Mean Square	F-ratio
Between Groups	43.4666	2	21.7333	0.0837 *
Within Groups	7013.9922	27	259.7773	
TOTAL	7057.4588	29		* not significant

Hypotheses 2, 3, 4, 5, 6

Using components of the same computer program and the same punched cards, a correlation matrix was completed for the remaining variables. The Anedecor's Table (Rahlf & Sokal, 1969) was consulted to determine the critical value at which a correlation coefficient would be significant for an N of thirty at an .05 level. This was found to be 0.35 and the remaining hypotheses were evaluated at this value.

Hypothesis 2

There is no significant relationship between the frequency of higher level questions asked and selected personality factors of the subjects.

Heslin-Blake Involvement Inventory. The inventory generated scores in three categories and a total involvement score (Appendix H). The correlations were computed separately for each score since this would yield information more meaningful than correlation with the total score alone.

The affective scores of the subjects had a standard deviation of 14.6719 derived from a mean of 100.8999. The mean indicated that the subjects displayed generally less affective involvement in terms of the mean of 116.0 established as the test norm. The correlation coefficient

for change in cognitive questioning as related to the affective score of the Heslin-Blake was -0.382. This is above the established critical value of 0.35.

The behavioral scores of the subjects had a mean of 88.5000 and a standard deviation of 14.6423. The mean score for the subjects on this scale is also below the test mean of 100.0 indicating less than average involvement in this category as well. The correlation coefficient for change in cognitive questioning as related to the behavioral score was -0.288 which is below the level of significance.

The cognitive scores of the subjects had a mean of 79.5666 and a standard deviation of 13.5562. The subjects' mean score is below the test mean of 86.0 for this scale. The correlation coefficient for change in cognitive questioning as related to scores on the cognitive scale was -0.004, well below the critical value established for significance.

TABLE 10

Summary of Heslin-Blake Scores

Scale	Test Mean	Subjects Mean	Subjects S.D.	Correlation Coefficient
Affective	116	100.8999	14.6719	-0.382 *
Behavioral	100	88.5000	14.6423	-0.288
Cognitive	86	79.5666	13.5562	-0.004

* significant according to Anedecor's Table

Myers-Briggs Type Indicator. This test generated scores in four categories.

Extravert - Introvert (EI)
Sensing - Intuition (SN)
Thinking - Feeling (TF)
Judgment - Perception (JP)

For computer coding the E scores were considered positive (+) and the I scores on the same scale negative (-). On the SN scale, S was coded as positive (+) and N as negative (-). On the TF scale, T was positive (+) and F negative (-). Finally the JP scale was coded J positive (+) and P negative (-). The correlations of these scores with change in higher level cognitive questioning therefore is not considered in terms of positive or negative as such, but rather as indicating which side of the scale is represented. The correlation coefficients for each of the scales in relation to change in cognitive questioning are as follows:

EI	-0.097
SN	+0.083
TF	-0.047
JP	+0.076

None of these were significant.

The correlation matrix did however show significant correlation of the JP score (-0.432) with change in low level questioning. The ANOVA for change in low level questioning had not been significant and this correlation of the JP score with low level questioning was not reflected in the correlation of the JP scale with higher level questioning.

In sum, Hypothesis 2 was accepted with a single exception in the seven categories accounted for. Specifically, that exception was the correlation of -0.382 on the affective scale of the Heslin-Blake with change in higher level questioning since it was above the critical value that had been established.

Hypothesis 3

There is no significant relationship between the frequency of higher level questions asked and the age of the subjects.

The mean age of the subjects was 37.3999 with a standard deviation of 11.5567. The correlation coefficient for this category was -0.006. This is below the critical value and Hypothesis 3 was accepted.

Hypothesis 4

There is no significant relationship between the frequency of higher level questions asked and the years

of teaching experience of the subjects. The mean number of years of experience was 12.2333 with a standard deviation of 9.3502. The correlation coefficient of 0.005 indicates no significant relationship exists between years of teaching experience and the frequency with which higher level questions are asked. Therefore Hypothesis 4 is accepted.

Hypothesis 5

There is no significant relationsip between the frequency of higher level questions asked and the social origin of the subjects.

The data for social origin was originally expressed in terms of social class as L (lower), UL (upper-lower), LM (lower-middle), M (middle), UM (upper-middle), and U (upper). For computer coding these were considered numerically as follows: 1 - lower, 2 - upper-lower, 3 - lower-middle, 4 - middle, 5 - upper-middle, and 6 - upper. The mean for the social origin of the subjects was 3.4 with a standard deviation of 0.9321 which reflects the homogeneity of the group in this category.

The correlation coefficient between social origin and higher level questioning was 0.044 which was below the established critical value and results in acceptance of Hypothesis 5.

TABLE 11

Summary of Hypotheses 3,4,5

Hypothesis	Group Mean	S.D.	r
3 - age	37.3999	11.5567	-0.006 *
4 - experience	12.2333	9.3502	0.005 *
5 - social origin	3.4	0.9321	0.044 *

* not significant

Hypothesis 6

There is no significant relationship between change in the frequency of higher level cognitive questions asked and the frequency of values-clarifying questions asked.

This hypothesis necessitated the inclusion of the data from the companion study (King, 1974) which focused on inservice workshops based on values-clarifying questions. The data for the Kind study (Appendix H) were generated from the same subjects, instruments, and tapes and therefore permit comparisons to be made between the studies.

The correlation between change in higher level questioning and change in values-clarifying questioning is not significant at 0.061. Hypothesis 6 is therefore accepted.

Other Data

In addition to the empirical data generated and analyzed in the study, the worksheets used during the in-service workshops (Appendices C and D) were evaluated. These could not be included in the statistical analyses since there was no way of identifying the subjects from the rest of the population present at each of the sessions, nor could the control be given the worksheets since these functioned as instructional devices during the presentation as well as for evaluation of the immediate effectiveness of the instruction. The transfer of learning from the workshop to class was evaluated on the post tapes and those findings have already been reported.

In general, most participants were able to classify the questions on Worksheet 1. They were able, in groups, to generate questions at all levels in response to the picture transparencies on Worksheet 2 and in the experimental session most were also able to write questions at all levels using their class textbook as a data source. These activities were completed with copies of the Barrett Taxonomy in hand for reference.

On the workshop evaluation form for the traditional approach all but two said they enjoyed the session and all but three said they planned to use the ideas in their classrooms. Several forms were returned blank.

For the experimental approach participants, all but two enjoyed the session. Yet all reported they would use the ideas in their classrooms. Again several forms were returned blank.

While these data are not useful for analysis, the general feeling of the groups after the presentation can be seen. The data also lead to discussion of the significant difference in cognitive questioning in the classrooms on the post tapes of the experimental group since both groups demonstrated that the instruction had been effective in that most could perform the tasks during the session and planned to apply the learning in their classrooms.

Summary

Of the six null hypotheses tested, only the first, which compared change resulting from an experimental workshop format, traditional format and a control group was rejected at a significant level.

One category out of the seven personality facotrs evaluated in Hypothesis 2 was rejected and the remaining six categories were accepted. This led to the rejection of the hypothesis that selected personality factors of the subjects would affect the outcome of the experiment.

Hypotheses 3, 4, and 5, which dealt with the age,

teaching experience, and social origin of the subjects were accepted since no significant relationships were found.

Finally, Hypothesis 6, which sought to determine a relationship between change in cognitive questioning and change in values-clarifying questioning as a result of the workshop approaches which were compared, was also accepted.

The implications of these findings and recommendations for further research are discussed in the next chapter.

CHAPTER V

Conclusions

This study was designed primarily to examine approaches to inservice training that would be effective in promulgating changes within the parameters that exist in most school districts. Considerations of time, costs, administrative details, etc., usually result in one-exposure, consultant-directed workshops as being the most feasible form of inservice training for school districts. The review of the literature on inservice training reinforced the decision to examine approaches of these workshops since no empirical studies on the topic could be located.

The choice of question-asking as the content for the workshops was made after a further literature search revealed that most verbal interaction in classrooms takes the pattern of teacher's question followed by student response. In addition, questioning *per se* and questioning tactics in classrooms had been well researched and much base information was available. This body of information allowed the researcher to make assumptions about the "average" questioning behavior of teachers in their classrooms and to plan the workshop experiences in terms of

"where they were" in relation to other populations as well as in terms of their expressed needs. The literature also gave direction to the planning of suitable pre and post measures for the evaluation of change in the teachers' questioning habits after the workshops.

A variety of classification models for questions was also located and reviewed. The Barrett Taxonomy was decided upon, rather than those models more commonly used such as Bloom's or Guilford's. Although it had been designed originally for "reading comprehension", it seemed to be the best model to use for the teacher training sessions. Besides being based on the work of Bloom, Guilford, Guzak and others, it contained many elements that could be assumed to be familiar to teachers from their undergraduate reading methods courses and from their reading manuals. The Barrett Taxonomy as expanded by Cooke refined those earlier learnings and was less "esoteric" than other classification instruments. It was assumed that the familiarity with some of the concepts would make it more easily transferable to questioning in other content areas.

Further examination of the literature indicated that age, experience, social origin, and personality were variables that might affect the outcomes of a teacher training project. These were therefore incorporated into

the experimental design as co-variables.

The two approaches that were compared were not taken from the literature per se since methodological approaches to one-exposure workshops have not been reported. The traditional approach (A) and the experimental approach (B) therefore were synthesized from information embedded in other contexts such as: long-term training projects, college course outlines, articles, interviews with educators, research on change strategies and from consideration of what constitutes good teaching-learning practices.

Using these bases, the study was designed, cooperation of school districts was secured, and the hypotheses were tested. The empirical data allowed the rejection of only one of the six null hypotheses--the primary one. This determined that the experimental approach resulted in significant positive change as a result of the workshop experience. The remaining five null hypotheses which dealt with possibly significant co-variables were all accepted.

The statistical findings allow a single empirically based conclusion to be drawn. Specifically, the experimental workshop approach was significantly effective above the .05 level in increasing the number of higher level questions asked by the subjects.

Implications of the Results

The rejection of the primary null hypothesis coupled with the acceptance of the others allows a variety of inferences to be made and raises a variety of questions.

In terms of the biographical data, one is left to speculate whether these are really variables that could significantly affect the outcome as the literature had indicated. Within the limits of this study, they were not significant. This may be due to the homogeneity of the group in the social origin category. The questionnaire (Appendix F) used to collect the biographical data also asked the subjects in what part of the country they had grown up. In all but one case this was reported as the East North Central geographical area. This is the area where they now live and work as well. This lack of diversity in their backgrounds may have affected the social origin finding. With a group of teachers whose backgrounds varied widely, significant correlations with change as a result of the workshop might have appeared.

The age and experience categories were highly correlated with each other (.93) as had been expected from the literature review, and there was wide range among the subjects. The null hypotheses related to these categories were both accepted. It is possible to speculate that

experience (when viewed as the number of years spent teaching) does not insure a cumulative kind of change resulting from the increased experience. Fifteen years of teaching experience might be viewed as equal to one year of teaching experience--repeated fifteen times. The established efficacy of the experimental approach indicated that this need not be so. Well-designed inservice programming over a period of years could result in measureable differences between the younger, less experienced teachers and those who have changed as a result of viable inservice activities over theyears in addition to refining newly acquired skills in classroom practice.

The lack of a significant correlation between six of the seven personality factors measured and change in questioning cannot be easily explained. Homogeneity of the group, as reported in the case of social origin, is precluded by relatively large standard deviations on all the scales. With the data available, the only logical explanations are that either the particular personality tests used did not isolate traits that could have affected the teachers' questioning behavior or that question-asking is a skill that can be taught regardless of the personalities of those learning the skill--a technical, generic skill.

The lack of significance in the correlation between change in affective questioning and change in cognitive questioning remains an unsolved problem. The experimental methodology combined the affective and cognitve not only in the content presented, but was demonstrated by the consultants during the instructional activities as well. Why this interrelation was not reflected in the subjects' translation and transfer of the workshop content to their classrooms may be found in the age old orientation of education toward the cognitive. Follow-up workshop activities could be designed to make this interrelation more overt by demonstrating to the subjects that their own learning was enhanced when affective and cognitive elements were combined. By bringing this concept more clearly into focus, they might then be able to transfer the interrelatedness to their teaching behaviors as well as they did as learners. Or, is it possible that, in spite of the literature, cognition and affect are not related? This seems unlikely when even the subjects learned better in the workshop format where they were combined.

In addition to the implication of the results in terms of the hypotheses tested, several additional conclusions can be made.

The Barrett Taxonomy apparently is a useful tool for classifying questions, oral or written, in all subject

areas. It is also a viable instrument for use in training teachers to identify the levels of questions that appear in their teaching materials and for helping them formulate their own questions at higher levels.

Finally the tapes verified, indirectly, that the language of the classroom is indeed "teacher question - student response." One teacher asked eight-nine low level questions during the half-hour pre-tape and another asked seventy-five! In the first case it was a primary level review of "seeds" and the second was a junior high school level physics lesson. In neither case was the teacher aware that questioning was being evaluated. One wonders when the children get a chance to think. The tapes also revealed that there are many good teachers "out there" and even some great ones who should be functioning as working models for others.

Recommendations for Further Research

As is usual with any research project, the process of designing a study, reviewing related literature, carrying it out, quantifying the findings, and interpreting the results makes the experimenter aware of a variety of other facets that could, and should be examined. This study was no exception and the following themes remain to be examined:

Time effect. Will the experimental group continue, or at least maintain, the growth over a full school year? Over several years?

Student change. Is change in the teacher's questioning habits reflected in students' learning? In their attitudes? In their thinking styles? In students' questions? In level and variety of student responses?

Verbal interaction other than questions. Are there ways that teachers induce cognitive activity in their classrooms other than by asking questions? What are these devices? Are they more or less effective than questions in terms of student learning?

Content knowledge. What is the relation between the extent of the teacher's knowledge in a given content area and the level of questions asked? Are "good questioners" equally proficient in all content areas.

Preservice education. What are the effects of specific kinds of teacher training programs on the questions asked by the graduates? What is the effect of preservice experiences on later attitudes toward inservice training?

Classroom organization. Are different patterns of teacher questions habitual in different kinds of classrooms? Self-contained? Grouped? Departmentalized?

pen space? Individualized? Multi-age?

Materials. Are some kinds of materials more conducive to higher level questions than others? Content oriented? Process oriented? Is there a relation between the questions teachers ask and the manuals they use? Is there a difference when they are not following a specific instructional program?

Workshops. Research is needed on all facets of the one-exposure inservice workshop; especially those that focus on the identification of other effective approaches. There is little to be gained in terms of day-to-day practice by proving that longer periods of instruction are superior. The very ubiquity of the consultant-directed, one-exposure workshop indicates that this form of inservice must be improved.

The list grows as each mention of needed research generates a variety of related needs. Perhaps it is, and should be, endless--reflecting the endlessness of education, learning, and knowledge.

REFERENCES

REFERENCES

Adair, C.H. & Kyle, A.R. Effects of feedback on teacher behavior. An exploration into the use of video-taping in teacher education programs. Southeastern Education Laboratory, 1969. (ED035592).

Adams, R. & Biddle, B. Realities of teaching: Explorations with videotape. New York: Holt, Rinehart and Winston, 1970.

Adams, T.H. The development of a method for analysis of questions asked by teachers in classroom discourse. Unpublished doctoral dissertation, Rutgers University, 1964, (25, 5, 1964:2809).

Allen, D.W. Technical skills of teaching. Palo Alto: Stanford University School of Education, 1967.

Amidon, E.J. & Hough, J.B. (Eds.) Interaction analysis: Theory, research, and application. Reading, Mass.: Addison, Wesley, 1967.

Aschner, J.J. Asking questions to trigger thinking. NEA Journal, 1961, 50, 44-46.

Asher, J.J. In-service education - psychological perspectives. Far West Laboratory for Educational Research and Development, 1967. (ED015891).

Austin, M.C. Professional training of reading personnel. In J.A. Figurel (Ed.) Innovation and change in reading instruction, Sixty-seventh yearbook of the National Society for the Study of Education. Chicago: University of Chicago Press, 1968.

Barr, A.S. The assessment of the teacher's personality. School Review, 1960, 68, 400-408.

Batchelder, H.T., McGlosson, M. & Scharling, R. Student teaching in secondary schools. New York: McGraw Hill, 1964.

Benjamin, W. et al. Specifications for comprehensive undergraduate and inservice teacher education programs for elementary schools. Washington, D.C.: U.S. Government Printing Office, 1968.

Berman, L.M. New priorities in the curriculum. Columbus, Ohio: Charles E. Merrill, 1968.

Bhaerman, R.D. A paradigm for accountability. Washington, D.C.: American Federation of Teachers, 1970.

Bloom, B.S. Individual differences in school achievement: A vanishing point? In L.J. Rubin (Ed.), Facts and feelings in the classroom. New York: Walker, 1973.

Bloom, B.S. (Ed.) Taxonomy of educational objectives; affective domain. New York: Longmans Green, 1958.

Bloom, B.S. (Ed.) Taxonomy of educational objectives; cognitive domain. New York: Longmans Green, 1956.

Borg, W.R., Kelley, M.L., Langer, P., & Gall, M. A micro-teaching approach to teacher education. Beverly Hills: Macmillan Educational Services, 1970.

Brantner, S.T. Teacher's opinions on inservice education. Pennsylvania State University School of Education, 1964. (ED016044).

Brown, G.J. Human teaching for human learning: An introduction to confluent education. New York: Viking Press, 1971.

Bruce, L.R. A determination of the relationships among SCIS teachers' personality traits, attitude toward teacher pupil relationship, understanding of science process skills, and question types. Unpublished doctoral dissertation, Michigan State University, 1969. (70-9503).

Bruner, J.S. The process of education. New York: Vintage Press Div., Random House, 1963.

Burton, D.L. The content of literature in the high school. In H.W. Painter (Ed.) Reaching children and young people through literature. Newark, Del.: International Reading Association, 1971.

Bush, R.N. Curriculum proof teachers: Who does what to whom. In L.J. Rubin (Ed.) Improving in-service education. Boston: Allyn Bacon, 1971.

Buskin, M. Putting the screws to in-service training. School Management, 1970, 14(9), 22-24.

Butts, J. & Raun, C. A study in teacher attitude change. Austin, Tex.: Austin Science Education Center, 1967. (ED021806).

Campion, N.R. Ask, don't tell. Readers Digest, Aug. 1966, 89, 49-52.

Carline, J.L. Relation between various verbal strategies of teaching behavior and achievement of elementary school children. Paper presented at annual meeting of AERA, Minneapolis, 1970. (ED038345).

Carner, R.L. Levels of questioning. Education, 1963, 83, 546-550.

Charles, C.M. Educational psychology: The instructional endeavor. St. Louis, Mo.: Mosby, 1972.

Clements, R.D. Art student-teacher questioning. Studies in Art Education, 1964, 6, 14-19.

Clymer, T. Current conceptions of reading. In J.A. Figurel (Ed.) Innovation and change in reading instruction, Sixty-seventh yearbook of the National Society for the Study of Education. Chicago: University of Chicago Press, 1968.

Codwell, J.E. A demonstration of the effect of an adaptation of microteaching on the instructional behavior of rural school teachers. Final report. Southern Association of Colleges and Schools, 1969. (ED034620).

Cooke, D.A. An analysis of reading comprehension questions in basal reading series according to the Barrett Taxonomy. Unpublished doctoral dissertation, Cornell University, 1970, (71-72, 124).

Corey, S.M. The teachers out-talk the pupils. School Review, 1940, 48, 745-752.

Crump, C. Teachers, questions, and cognition. Educational Leadership, 1970, 27, 657-660.

Davies, D. Teacher education. Cited in Notes and working papers concerning the administration of programs authorized under Title III of Public Law 89-10. (Document 74-8850) Washington, D.C.: U.S. Govt. Printing Office.

Davis, O.L. & Hunkins, F.P. Textbook questions: what thinking processes do they foster? Peabody Journal of Education, 1966, 43, 285-292.

Dewey, J. Experience and nature. Chicago: Open Court Press, 1925.

Dewey, J. Democracy and education. New York: Macmillan, 1916, reprint 1964.

Dewey, J. Theory of valuation. Chicago: University of Chicago Press, 1939.

Eash, M. Reading and thinking. Garden City, N.Y.: Doubleday & Co., 1967.

Eisner, E.W. The intelligence of feeling. In L.J. Rubin (Ed.) Facts and feelings in the classroom. New York: Walker, 1973.

Embree, J.E. The relationship of life experience patterns and personality factors indicating innovative potential. Unpublished doctoral dissertation, Utah State University, 1969.

Flavell, J.H. The developmental psychology of Jean Piaget. Princeton, N.J.: Van Nostrand, 1963.

Floyd, W.D. An analysis of the oral questioning activity in select Colorado primary classrooms. Unpublished doctoral dissertation, Colorado State College, 1960, (22, 1960:45).

Gagnon, A.L. An analysis of an experimental methodology for teaching thinking and clarifying values. Unpublished doctoral dissertation, Wayne State University, 1965.

Gall, M.D. The use of questions in teaching. Review of Educational Research, 1970, 40, 707-721.

Gallagher, J.J. Expressive thought by gifted children in the classroom. Elementary English, 1965, 42, 559-568.

Gallagher, J.J. & Aschner, M.J. A preliminary report: analysis of classroom interaction. Merrill-Palmer Quarterly of Behavior and Development, 1963, 9, 183-194.

Getzels, J.W. Administration as a social process. In A. Halpin (Ed.) Administrative theory in education. Chicago: Midwest Administration Center, 1958.

Getzels, J.W. Conflict and role behavior in the educational setting. In R.J. Havighurst, B.L. Neugarten, and J.M. Falk (Eds.), Society and education. Boston: Allyn Bacon, 1967.

Gillin, C.J. and others. Questioneze: Individual or group game for developing questioning skills, Columbus, Ohio: Chas. Merrill, 1972.

Good, T. Which pupils do teachers call on? Elementary School Journal, 1970, 70, 190-198.

Good, T.L. & Brophy, J.E. Looking in classrooms. New York: Harper & Row, 1973.

Groissir, P. How to use the fine art of questioning. New York: Teacher's Practical Press, 1964.

Gross, N. An attempt to implement a major educational innovation: A sociological inquiry. Cambridge, Mass.: Harvard University, 1968. (ED032649).

Guilford, J.P. Fundamental statistics in psychology and education. New York: McGraw-Hill, 1965.

Guilford, J.P. The structure of the intellect. (Mimeo, n.d.).

Guin-Decarie, T. Intelligence and affectivity in early childhood. New York: International Universities Press, 1965.

Guzak, F. Teacher questioning and reading. Reading Teacher, 1967, 21, 227-234.

Harris, B.M. & Bessent, W. In-service education: A guide to better practice. Englewood Cliffs, N.J.: Prentice-Hall, 1969.

Havighurst, R.L. & Neugarten, B.L. Society and education. (3rd ed.) Boston: Allyn Bacon, 1967.

Hays, W.L. Statistics for psychologists. New York: Holt, Rinehart and Winston, 1963.

Haynes, H.C. Relation of teacher intelligence, teacher experience, and type of school to types of questions. Unpublished doctoral dissertation, George Peabody College for Teachers, 1935.

Hermanowicz, H.J. The pluralistic world of beginning teachers. In The world of beginning teachers. Washington, D.C.: National Education Association, 1966.

Herrick, V.E. The evaluation of change in programs of in-service education. In N.B. Henry (Ed.), In-service education. Fifty-sixth yearbook of the National Society for the Study of Education. Chicago: University of Chicago Press, 1957.

Hill, J.E. & Kerber, S. Models, methods, and analytical procedures in education research. Detroit: Wayne University Press, 1967.

Horn, E. Distribution of opportunity for participation among various pupils in classroom recitations. New York: Teacher's College Press, 1914.

Houston, V.M. Improving the quality of classroom questions and questioning. Educational Administration and Supervision, 1938, 24, 17-27.

Hudgins, B. & Ahlbrand, W. A study of classroom interaction and thinking. Technical Report Series, No. 8, St. Ann, Mo.: Central Midwestern Regional Educational Laboratory, 1969.

Hunkins, F.P. Questioning strategies and techniques. Boston: Allyn Bacon, 1972.

Hunkins, F.P. & Spears, P.F. Social studies for the evolving individual. Washington, D.C.: Association for Supervision and Curriculum Development, 1973.

Jansen, M., Poul, E.J. & Peer, M. Teacher characteristics and other factors affecting classroom interaction and teaching behavior. International Review of Education, 1972, 18(4), 27-46.

Johnson, M. Model program for teacher in-service training emphasizing the affective domain. Elk-Grove Training and Development Center, Arlington Heights, Ill., 1969. (ED034747).

Jones, J.E. & Pfeiffer, J.W. The 1973 annual handbook for group facilitators. Iowa City: University Associates, 1973.

Jones, R.M. Fantasy and feeling in education. New York: Harper & Row, 1968.

Jones, V. The influence of teacher student introversion, achievement, and similarity on teacher-student dyadic classroom interactions. Unpublished doctoral dissertation, University of Texas, 1971.

Joyce, B.R. The teacher-innovator: A program to prepare teachers. Final report on Project No. 8-9019, Columbia University, 1968.

Khanna, J.L. A humanistic approach to in-service education for teachers. Project Upper Cumberland, Livingston, Tenn., 1970. (ED045573).

King, M.K. A comparison of two approaches to one-exposure workshops based on values. Unpublished doctoral dissertation, Loyola University, 1974, (in progress).

Kleinman, G.S. Teacher's questions and student understanding in science. Journal of Research in Science Teaching, 1965, 3, 307-317.

Krantz, P., Weber, W., & Fishell, K. The relationships between teacher perception of pupils and teacher behavior toward those pupils. Paper delivered at AERA annual meeting, 1970. (038678).

Lamy, M.W. Relationship of self-perceptions of early primary children to achievement in reading. In I.J. Gordon (Ed.) Human development: Readings in research. Chicago: Scott Foresman, 1965.

Laughlin, R.L. On questioning. Educational Forum, 1961, 25, 481-482.

Lavisky, S. Faculty in-service training program and the educational change process. Alexandria, Va.: Human Resources Research Organization, 1969.

Leary, P.S. & Wolf, W.C. The effectiveness of short term training programs. School and Society, 1972, 100, 23-25.

Loy, J.W. Social psychological characteristics of innovators. American Sociological Review, 1969, 34, 73-82.

Lyon, H.C. Learning to feel: Feeling to learn. Columbus, Ohio: Chas. E. Merrill, 1971.

Machie, R.R. & Christensen, P.R. Translation and application of psychological research. Technical report 716-1. Coleta, Cal.: Human Factors Research, Inc., 1967. (ED030786).

Maslow, S. What is a taoistic teacher? In L.J. Rubin (Ed.), Facts and feelings in the classroom. New York: Walker, 1973.

McMurrin, S.M. What tasks for the schools? Saturday Review, 1967, 14, 41.

Meade, E.J. No health in us. In L.J. Rubin (Ed.), Improving inservice education. Boston: Allyn Bacon, 1971.

Mendoza, S., Good, T., & Brophy, J. Who talks in junior high classrooms? Report series No. 68, Research and Development Center for Teacher Education. Austin: University of Texas, 1972.

Meredith, W.M. Basic mathematical and statistical tables for psychology and education. New York: McGraw-Hill, 1967.

Moburg, L.G. Inservice teacher training in reading. Newark, Delaware: International Reading Association, 1972.

Morison, E.E. Men, machines, and modern times. Cambridge, Mass.: NIT Press, 1966.

Myers, I.B. Manual for the Myers-Briggs Type Indicator. Princeton, N.J.: Educational Testing Service, 1962.

Myers, J.L. Fundamentals of experimental design. Boston: Allyn Bacon, 1966.

Otto, W. & Erickson, L. Inservice education to improve reading instruction. Newark, Delaware: International Reading Association, 1973.

Parl, B. Basic statistics. Garden City, New York: Doubleday, 1967.

Perloff, E. A pilot study evaluating the NDEA summer institute program. Pittsburgh: American Institutes for Research, 1970.

Peterson, W.A. Age, teacher's role, and the institutional setting. In R.J. Havighurst, B.L. Neugarten, & J.M. Falk (Eds.), Society and education. Boston: Allyn Bacon, 1967.

Piaget, J. & Inhelder, B. The psychology of the child. Translated by H. Weaver. New York: Basic Books, 1969.

Ploutz, P.F. The principal's role in the elementary science program. Science Education, 1963, 47(3), 176-179.

Prince, R. A study of the relationships between individual values and administrative effectiveness in the school situation. Unpublished doctoral dissertation, University of Chicago, 1957.

Purkey, W.W. Self-concept and school achievement. Englewood Cliffs, N.J.: Prentice Hall, 1970.

Quant, I. Self-concept and reading. Newark, Delaware: International Reading Association, 1972.

Rahlf, F.J. & Sokal, R. Statistical tables. San Francisco: Freeman & Co., 1969.

Reese, J.E. & Darcy, R.L. Report on the 1966 NDEA advanced study institute in economics. Consortium of Professional Associations for the Study of Special Teacher Improvement Programs, 1966. (ED064192).

Reno, R.H. Inservice teacher training: A critique, not an indictment. Education Age, November, 1968.

Ritz, W.C. & Wallace, C.W. How to conduct a workshop. Syracuse, N.Y.: Eastern Regional Institute for Education, 1970. (ED065-486).

Rogers, C.R. Freedom to learn. Columbus, Ohio: Charles E. Merrill, 1969.

Rogers, V.M. Varying the cognitive levels of classroom questions in elementary social studies: an analysis of the use of questions by student teachers. Unpublished doctoral dissertation, University of Texas, 1969, (69-15, 862).

Rubin, L.J. A study on the continuing education of teachers. Center for Coordinated Education, University of California, Santa Barbara, 1969. (ED036487).

Rubin, L.J. The self-evolving teacher. In L.J. Rubin (Ed.) Improving in-service education, Boston: Allyn Bacon, 1971.

Ryans, D.G. Characteristics of teachers. Washington, D.C.: American Council on Education, 1960.

Sanders, N.M. Classroom questions: What kind? New York: Harper & Row, 1966.

Schaefer, E. Home tutoring, maternal behavior and infant intellectual development. Paper presented at American Psychological Association meeting, Washington, D.C., September 4, 1969. (ED034675).

Sears, P. & Sherman, V. In pursuit of self-esteem. Belmont, Cal.: Wadsworth, 1964.

Slonin, M.J. Sampling - a quick and reliable guide to practical statistics for the layman, student, or businessman. New York: Simon and Schuster, 1960.

Smith, O.B. Teachers for the real world. Washington, D.C.: American Association of Colleges for Teacher Education, 1971.

Smith, O.B. & Meux, M.O. A study of the logic of teaching. Urbana: University of Illinois, 1960.

Soar, R.S. Optimum teacher-pupil interaction for pupil growth. Educational Leadership, 1967, (26, 275-280).

Sr. Constantine, An experimental study of the effects of short courses in speech and in the art of questioning upon the performance of student teachers in secondary English instruction. Illinois Statewide Curriculum Study Center in the Preparation of Secondary School English Teachers. Loyola University, Chicago, 1969.

Stevens, R.L. The question as a measure of efficiency in instruction. Teacher's College Contributions to Education, No. 48. New York: Teacher's College, Columbia University, 1912.

Strang, R. Guidance and the teaching of reading. Newark, Del.: International Reading Association, 1969.

Tate, M.W. Statistics in education and psychology. New York: Macmillan, 1965.

Trosky, O.S. Teachers questioning behavior in the development of reading comprehension. In H.A. Klein (Ed.) The quest for competency in teaching reading. Newark, Del.: International Reading Association, 1972.

Tyler, R.W. The autonomous teacher. In L.J. Rubin (Ed.) Facts and feelings in the classroom. New York: Walker, 1973.

Van Dalen, D.B. Understanding educational research. New York: McGraw-Hill, 1962.

Wallen, N.E. and others. The Taba curriculum development project in social studies. San Francisco: San Francisco State College, 1969. (ED040-106).

Ward, P. The use of the portable videotape recorder in helping teachers self-evaluate their teaching behavior. Berkeley: University of California, 1970. (ED038365).

Washburne, C. & Heil, L.M. What characteristics of teachers affect children's growth? School Review, 1960. (68, 420-428).

Wattenberg, W.J. & Clifford, C. Relationships of self-concept to beginning achievement in reading. Final report. Wayne State University, 1962. (USOE, CR.P. No. 377).

Wattenberg, W.J., Menge, J.W., Faunce, R., Sullivan, J.C., Ellsworth, R.E., Peters, M., Rasey, M., & McDaid, E. Social origin and teaching role - some typical patterns. In R.J. Havighurst, B.L. Neugarten, & S.M. Falk (Eds.), Society and Education. Boston: Allyn Bacon, 1967.

Westby-Gibson, D. In-service education - perspectives for educators. Far West Laboratory for Educational Research and Development, 1967. (ED015-161).

White, M.A. A study of contrasting patterns in in-service education. University of Texas Science Education Center, 1967. (ED021807).

Williams, F.E. Workshops on the use and adaptations of new media for developing creativity. Washington, D.C.: U.S. Office of Education, Bureau of Research, 1968.

APPENDIX A

Taxonomy of Question Levels

Taxonomy of Question Levels

There is a need for a complete, detailed, yet practical and easy to use question taxonomy. Overly simple ones, such as Ward (1970) with only three categories, are too vague for classroom use and the taxonomies developed by Bloom (1954) or Guilford (1963) are too far removed from the day to day content of classroom instruction. This taxonomy, developed by Barrett (Clymer, 1968) and expanded by Cooke (1971) meets the criteria of simplicity, adequate detail, and classroom content orientation.

The examples accompanying each level illustrate the kinds of questions which may be classified at that level. Where practical, sentence "patterns" rather than specific questions are used. Very often it can be established from the pattern whether the question involves details, character traits, comparison, cause and effect relationships, and so on. However, only the content can tell whether recall or inference is required.

The taxonomy as given here is reproduced from Chapter One of the 1968 Yearbook of the National Society for the Study of Education and in this expanded form is the instrument that was used to classify the questions in this study.

Cooke (1971) Adaptation of The Barrett Taxonomy of Cognitive and Affective Dimensions of Reading Comprehension

1.0 Literal Comprehension. Literal comprehension focuses on ideas and information which are explicitly stated in the selection. Purposes for reading and teacher's questions designed to elicit responses at this level may range from simple to complex. A simple task in literal comprehension may be the recognition or recall of a single fact or incident. A more complex task might be the recognition or recall of a series of facts or the sequencing of incidents in a reading selection. (Or these tasks may be related to an exercise which may itself be considered as a reading selection.) Purposes and questions at this level may have the following characteristics.

1.1 Recognition requires the student to locate or identify ideas or information explicitly stated in the reading selection itself or in exercises which use the explicit ideas and information presented in the reading selection. Recognition tasks are:

1.11 Recognition of Details. The student is required to locate or identify facts such

as the names of characters, the time of the story, or the place of the story (or just about any other kind of explicit fact or detail requiring literal comprehension).

Examples and Patterns:

1. Locate the name of _____.
2. Find the following information: date of flight, time in orbit, speed of the space ship, and the height reached.
3. Read for details as you read.
4. Find the story by using the contents pages.
5. Read and find out: if _____ thinks _____; the time of day _____.
6. Add each explorer to your chart telling "Who," "What" and "Where" and "When". (This exercise, even though it involves the recognition of separate details, is considered one question.)
7. Skim (or read) for locations, names, or dates.

1.12 Recognition of Main Ideas. The student is asked to locate or identify an explicit statement in or from a selection which is a main idea of a paragraph or a larger

portion of the selection. (At times caution and real discernment must be utilized to distinguish a main idea from a detail.)

Examples and Patterns:

1. Find out what _____ is going to do.
2. What happened when or duting _____?
3. What important thing did he find out?
4. What part did he play in _____?
5. Underline the main idea in this _____.

1.13 Recognition of a Sequence. The student is required to locate or identify the order of incidents or actions explicitly stated in the selection.

Examples and Patterns:

1. Read to find out: What did _____ do first?
2. What did _____ do next?
3. What did _____ do last?
4. Be prepared to tell how Geraldine changed her white dress to red and yellow and what happened then. (This sentence contains two separate questions: how Geraldine changed her dress requires the recognition of a

sequence, level 1.13; what happened then requires the recognition of a main idea and is classified at level 1.12.)

1.14 Recognition of Comparison. The student is requested to locate or identify likenesses and differences in characters, times, and places that are explicitly stated in the selection. (Levels 1.14, 1.24, and 3.4 involve comparisons. Seeing likenesses and differences, seeing relationships, and making comparisons between characters, incidents, and situations are fairly synonymous at these levels. However, when a cause and effect relationship exists, it shall be classified at the next higher level of the taxonomy provided the criteria of some other level are not more nearly met. There is a level for recognition of comparisons, and a level for inferring of comparisons. Examples for each of these levels define what constitutes a "comparison" question.)

Examples and Patterns:

1. Read to find out the difference between _____ and _____.

2. Look for ideas which conflict with each other.
3. Are _____ and _____ the same?
4. Find similes; find metaphors.
5. Read to find out how _____ changed.

1.15 Recognition of Cause and Effect Relationships. The student in this instance may be required to locate or identify the explicitly stated reasons for certain happenings or actions in the selection. (Cause and effect are not restricted to motivations and intents. For example, there are cause and effect relationships which are inorganic.)

Examples and Patterns:

1. Find out the reasons for _____.
2. What caused _____?
3. What were the results of _____? (In this example the effect has to be recognized.)
4. Find the sentence that tells why _____ did (or was) _____.
5. What happened to shorten his stay at _____?

1.16 Recognition of Character Traits. The student is required to identify or locate explicit statements about a character which helps to point up the type of person he is. Examples and Patterns:

1. Read orally the parts which prove that he was clever, bold, kind, courageous, and intelligent.
2. Find the words and phrases which describe the characters. (Some of these words and phrases describe character traits. Of course, many descriptive words and phrases do not pertain to character traits.)
3. Find agnomens.

1.2 Recall requires the student to produce from memory ideas and information explicitly stated in the reading selection. Recall tasks are:

1.21 Recall of Details. The student is asked to produce from memroy facts such as the names of characters, the time of the story, or the place of the story. (Recall of almost any explicit fact or detail from the selection is included. A single de-

tail as well as several details scattered throughout the story are both level 1.21 questions.)

Examples and Patterns:

1. What hardships were endured?
2. How much land was claimed?
3. Who paid for his journey?
4. Over what kind of land did they travel? (This question requires recall of details from several places in the story; however, no sequencing or reorganization is asked for.)
5. Write a list of all the details you can remember.
6. Recite the _____ listed.

1.22 Recall of Main Ideas. The student is required to state the main idea of a paragraph or a larger portion of the selection from memory, when the main idea is explicitly stated in the selection.

Examples and Patterns:

1. What did the _____ mean to the world?

2. What important statement did he make?
3. What uses were made of _____?
4. What knowledge was gained from _____?
5. What did he do _____?
6. What did he say? (This question refers to what Stanley says when he first meets Livingstone and in this instance constitutes a level 1.22 thought process.)
7. What happened to _____?

1.23 Recall of a Sequence. The student is asked to provide from memory the order of incidents or action explicitly stated in the selection. (A sequence will be constituted only when order of occurrence is specifically required.)

Examples and Patterns:

1. Describe in correct sequence _____.
2. Look at the illustrations and tell the story in sequence. (The illustrations aid the recall but are not sufficient.)

3. Number these _____ in the order in which they took place.
4. Make a chart that shows the _____ throughout the story.
5. Tell in correct order _____.
6. What happened on the fourth day?

1.24 Recall of Comparisons. The student is required to call up from memory the likenesses and differences in characters, times, and places that are explicitly stated in the selection. (Questions are classified at this level if they ask for likenesses and/or differences.)

Examples and Patterns:

1. Compare and contrast one journey with another journey as to: climate, terrain, natives, length of time, difficulties, and successes.
2. How was this _____ different from others?
3. In what ways were _____ and _____ similar? different?
4. Compare and contrast each of the following pairs: (Each pair con-

stitutes a question.)

5. Compare the size of _____ and _____.

1.25 Recall of Cause and Effect Relationships. The student is requested to produce from memory explicitly stated reasons for certain happenings or actions in the selection.

Examples and Patterns:

1. Why did _____ do _____?
2. Why was _____ so determined to _____?
3. What was the purpose of _____?
4. What caused _____?
5. Why did _____ decide to _____?
6. How did _____ accomplish _____? (The action in such instances causes an effect.)
7. What was the reaction of _____ to _____?

1.26 Recall of Character Traits. The student is asked to call up from memory explicit statements about characters which illustrate the type of persons they are.

Examples and Patterns:

1. Why were they well suited to _____?
2. How did Stanley feel? (The story states that Stanley felt shy.)
3. How had he shown that he was _____?
4. What was _____ like?
5. Summarize her attitude toward life. (In spite of the use of the word summarize, this questions actually calls for no more than the recall of an explicit statement.)

2.0 Reorganization. Reorganization requires the student to analyze, synthesize, and/or organize ideas or information explicitly stated in the selection. To produce the desired thought product, the reader may utilize the statements of the author verbatim or he may paraphrase or translate the author's statements. Reorganization tasks are:

2.1 Classifying. In this instance the student is required to place people, things, places, and/or events into categories. (When pupils are asked to recognize or recall certain kinds of details, relationships, or traits, they are in effect classifying, but at a lower level of the taxonomy. The key to this level is that things

must be sorted into a category or a class.)

Examples and Patterns:

Read each phrase below. Does it tell you "who," "what," "when," "how," or "where"?

1. "sank here" (The phrases are taken from the selection.)
2. Which of the following are _____?
3. Place the following under the proper heading.
4. Classify the following according to _____.
5. Which of the following _____ does not belong? (Where based upon the selection and not merely a matter of word meaning. Care also has to be exercised in such cases to make sure the inferring of a comparison, level 3.4 is not necessitated.)

2.2 Outlining. The student is requested to organize the selection into outline form using direct statements or paraphrased statements from the selection.

Examples and Patterns:

1. Organize the facts into main heads and subheads to form an outline.
2. Complete the following outline.
3. Divide the story into _____ parts.

2.3 Summarizing. The student is asked to condense the selection using direct or paraphrased statements from the selection. (This level is interpreted as also being applicable when less than the entire selection is condensed.)

Examples and Patterns:

1. What has happened up to this point?
2. Tell the story in your own words.

2.4 Synthesizing. In this instance, the student is requested to consolidate explicit ideas or information from more than one source. (The pupil is required to put together information from more than one place.) More is required than just a collecting of information for this information must become fused so that information from more than one source provides a single answer to a question.

While the taxonomy refers to a single selection, quite often in order to answer a question information obtained from a previous selection or selections must be utilized. The intent of the taxonomy, despite its restrictive reference to the selection, is not to disqualify such questions. To do so would eliminate not only the reading comprehension questions from review

units, lessons, and exercises, but also many other reading comprehension questions.)

Examples and Patterns:

1. How long did the entire _____ last?
2. Fill in your time line.
3. What was the speed of the _____?
4. Did _____ have enough _____?
5. Compute _____.
6. How many time did _____ take place?
7. On what day did _____ happen?
8. Figure out _____.

3.0 Inferential Comprehension. Inferential comprehension is demonstrated by the student when he uses the ideas and information explicitly stated in the selection, his intuition, and his personal experience as a basis for conjectures and hypotheses. Inferences drawn by the student may be either convergent or divergent in nature and the student may or may not be asked to verbalize the rationale underlying his inferences. In general, then, inferential comprehension is stimulated by purposes for reading and teachers' questions which demand thinking and imagination that go beyond the printed page. (Personal experience is interpreted to include formal learning experiences, as well as

those things which the reader has personally experienced in a first hand situation. Prior knowledge, regardless of where this knowledge came from, is an integral part of inference. The crucial factor distinguishing inference questions from recognition and recall questions is that their answers are not explicitly stated but must be inferred.)

3.1 Inferring Supporting Details. In this instance, the student is asked to conjecture about additional facts the author might have included in the selection which would have made it more informative, interesting, or appealing. (Whether or not additioanl details are indeed "more informative, interesting, or appealing" is largely subjective. If the inferring of a detail is required, the question is to be placed at this level.)

Examples and Patterns:

1. Did he realize _____?
2. Was his discovery planned or accidental? (The classification of this question at this level is another example of making a debatable decision in favor of the higher category. (The statement in the reader says,

"He sailed west toward Greenland, but because of bad storms he went off course and came instead upon an unknown land.")

3. How did he converse with the natives?
4. What was the weather like?
5. Do you think _____?
6. Did _____ believe? (Such a question may go beyond inference and require level 5.2, Identification.)

3.2 Inferring Main Ideas. The student is required to provide the main idea, general significance, theme, or moral which is not explicitly stated in the selection. (Such questions may pertain to part of a selection.)

Examples and Patterns:

1. What is the main idea of this _____?
2. Discuss the significance of _____?
3. Read these short workbook selections and then select or write the best title for each. (This question goes beyond synthesis and requires inference.)
4. What is the poem or story saying?
5. Answer this riddle. (Where more than mere word meaning is required.)

6. Read these paragraphs and then write or select the main idea of each.
7. Write a sentence summarizing the main idea of _____.

3.3 Inferring Sequence. The student, in this case, may be requested to conjecture as to what action or incident might have taken place between two explicitly stated actions or incidents, or he may be asked to hypothesize about what would happen next if the selection had not ended as it did but had been extended.

Examples and Patterns:

1. Many days from _____ through _____ are omitted in his report. Suggest the events that happened in those days.
2. What will happen next?
3. What happened between _____ and _____?
4. Place these _____ in logical order.

3.4 Inferring Comparisons. The student is required to infer likenesses and differences in characters, times, or places. Such inferential comparisons revolve around ideas such as: 'here and there,' 'then and now,' 'he and he,' 'he and she,' and 'she and she.'

Examples and Patterns:

1. Compare: effectiveness and value to future explorers.
2. Compare _____ as to completeness and importance or detail.
3. How does _____ resemble _____?
4. Compare _____ with _____.
5. Are _____ and _____ related?
6. Complete the following similes or metaphors. (If based on ideas in the selection.)

3.5 Inferring Cause and Effect Relationships. The student is required to hypothesize about the motivations of characters and their interactions with time and place. He may also be required to conjecture as to what caused the author to include certain ideas, words, characterizations, and actions in his writing. ("Why" and "because" are often clues to this category.)

Examples and Patterns:

1. Why did Marco Polo say, "Take this book and cause it to be read to you"? (The answer requires inferring why people would have to have the book read to them.)
2. Why was it necessary to _____?

3. Why would _____?

4. How did _____ know _____?

5. Why did they _____?

6. Why did the author include _____?

7. What is the result of _____?

8. What might have happened if _____?

9. What makes this _____ a _____?

10. What makes you think _____?

11. Did _____ because _____?

12. How could _____?

13. Why is it helpful to have a _____?

3.6 Inferring Character Traits. In this case, the student is asked to hypothesize about the nature of characters on the basis of explicit clues presented in the selection.

Examples and Patterns:

1. List their character traits.

2. What did _____ prove about their attitudes toward _____?

3. What does _____ tell us about him?

4. Is _____ very wise?

5. What kind of person is _____?

6. What words will describe _____?

7. What was _____'s attitude about _____?

3.7 Predicting Outcomes. The student is requested to read an initial portion of a selection and on the basis of this reading he is required to conjecture about the outcome of the selection. (An initial portion of a selection may be no more than the title.)

Examples and Patterns:

1. Do you think _____ will _____?
2. What do you think will happen?
3. Will he help them?
4. Someone may predict _____.
5. Read _____ and guess what will happen.

3.8 Interpreting Figurative Language. The student, in this instance, is asked to infer literal meanings from the author's figurative use of language.

Examples and Patterns:

1. What is meant by the phrase "continue unrolling the map"?
2. Interpret the following figurative expressions:

4.0 Evaluation. Purposes for reading and teacher's questions, in this instance, require responses by the student which indicate that he has made an evaluative judgment by comparing ideas presented in

the selection with external criteria provided by the teacher, other authorities, or other written sources, or with internal criteria provided by the reader's experiences, knowledge, or values. In essence evaluation deals with judgment and focuses on qualities of accuracy, acceptability, desirability, worth, or probability of occurrence. (Evaluative judgment is the key to this category.) Evaluative thinking may be demonstrated by asking the student to make the following judgments.

4.1 Judgments of Reality or Fantasy. Could this really happen? Such a question calls for a judgment by the reader based on his experience. Examples and Patterns:

1. Is _____ imaginary?
2. How many unreal things can you find?
3. Did _____ really happen?
4. Is _____ fact or fiction?
5. Is _____ possible?

4.2 Judgments of Fact or Opinion. Does the author provide adequate support for his conclusions? Is the author attempting to sway your thinking? Questions of this type require the student to analyze and evaluate the writing on the basis

of the knowledge he has on the subject as well as to analyze and evaluate the intent of the author.

Examples and Patterns:

1. Do you think _____ had anything to do with _____?
2. Which _____ seem to be correct?
3. What strange ideas did _____ have?
4. Which _____ are fact? opinion?
5. Based on the facts that are given, does _____ seem reasonable?
6. Does the author convince you that _____?

4.3 Judgments of Adequacy and Validity. Is the information presented here in keeping with what you have read on the subject in other sources? Questions of this nature call for the reader to compare written sources of information, with an eye toward agreement and disagreement and completeness and incompleteness.

Examples and Patterns:

1. Did _____ ever actually _____?
2. Continue to check on _____.
3. Why was _____ true? not true?
4. Is adequate information given about _____?

5. Is _____ really _____?
6. Which ideas are still accepted and which ones are no longer believed?
7. Label each _____ true or false.
8. Find proof from other sources that _____.

4.4 Judgments of Appropriateness. What part of the story best describes the main character? Such a question requires the reader to make a judgment about the relative adequacy of different parts of the selection to answer the question. (It is believed that this level should not be limited to the main character.)

4.5 Judgments of Worth, Desirability and Acceptability. Was the character right or wrong in what he did? Was his behavior good or bad? Questions of this nature call for judgments based on the reader's moral code or his value system. Examples and Patterns:

1. Do you like this character?
2. How do you feel about this character?
3. Is _____ the right thing to do?
4. Is _____ acting fairly?
5. Why was it wrong for _____ to _____?
6. What do you think of _____'s attitude?
7. Is a high degree of _____ a good quality

to have?

5.0 Appreciation. Appreciation involves all the previously cited cognitive dimensions of reading, for it deals with the psychological and aesthetic impact of the selection on the reader. Appreciation calls for the student to be emotionally and aesthetically sensitive to the work and to have a reaction to the worth of its psychological and artistic elements. Appreciation includes both the knowledge of and the emotional response to literary techniques, forms, styles, and structures.

5.1 Emotional Response to the Content. The student is required to verbalize his feelings about the selection in terms of interest, excitement, boredom, fear, hate, amusement, etc. It is concerned with the emotional impact of the total work on the reader. (The emotional impact of the total work on the reader is not considered necessary.)

Examples and Patterns:

1. Are you surprised?
2. Why did you like or dislike this story?
3. Was this story interesting? funny?
4. What part of the story did you find most exciting?

5. Select your favorite story or passage.
6. Questions requiring the pupil to respond to the plot.
7. Did the story have a happy ending?
8. Which _____ did you enjoy the most?

5.2 Identification with Characters or Incidents. Teachers' questions of this nature will elicit responses from the reader which demonstrate his sensitivity to, sympathy for, and empathy with characters and happenings portrayed by the author.

Examples and Patterns:

1. What words will describe the feelings of _____?
2. How did they feel when _____?
3. Will _____ be difficult for _____? (This goes beyond level 3.7, prediction.)
4. Would you _____?
5. Encourage pupils to identify with _____.
6. Do you think he will follow the advice?
7. Did he act recklessly? (This would be an example of level 4.5, except that in order to make a decision as to whether or not Captain Anderson acted recklessly, the situation must be identified with.)

8. Write your own ending to this story. (It is believed that this question goes beyond inferring of a sequence and the making of a prediction and falls at level 5.2.)
9. Devise a conversation between _____ and _____.
10. What would you do if you were _____?
11. What is _____ thinking?
12. How would you have felt if you were _____?
13. How did _____ talk when _____?
14. Relate _____ to your own life.

5.3 Reactions to the Author's Use of Language. In this instance the student is required to respond to the author's craftsmanship in terms of the semantic dimensions of the selection, namely, connotations and denotations of words. (Level 5.3 pertains essentially to the appreciation of the author's skill and craftsmanship in selecting and using words. Such appreciation is dependent upon the denotations and connotations of words. Emotions are inherent in appreciation.)

Examples and Patterns:

1. Questions requiring recognition or discussion of qualifiers.
2. Why is _____ a good term?

3. Demonstrate how his voice sounded when he spoke _____.
4. What personification, allegory, puns, malapropisms did the author use?
5. What "loaded" language was used? propaganda? understatements? exaggerations? emotion-laden words?
6. How did the author express the idea of _____?
7. In what way is the word _____ used in the selection?

5.4 Imagery. In this instance, the reader is required to verbalize his feelings with regard to the author's artistic ability to paint word pictures which cause the reader to visualize, smell, taste, hear, or feel.

Examples and Patterns:

1. Pictures may be drawn to illustrate the different phases of the antelope hunt. (This was classified at level 5.4 which would be perfectly congruent if Barrett had used the word express instead of verbalize.)
2. Based upon the selection draw a picture or make a design. (Caution must be exercised in determining that such questions do require

appreciation of the author's artistic ability to create imagery and not just understanding of word or sentence meaning.)

3. Read rhythmically and expressively (includes choral reading.)
4. Dramatize the story.
5. Read the part the way he might have talked. (This question goes beyond identifying as spelled out at level 5.2 and requires level 5.4.)
6. Find the phrase which helps you build a mental picture of _____.
7. In a mind's-eye picture, how did the _____ look?
8. Reenact the _____ scene.
9. How does _____ make you feel?
10. Take the role of _____. (This goes beyond identification.)
11. Questions requiring appreciation of dialogue may require utilization of this level.
12. What _____ has the author created?
13. How did the author cause you to _____?

APPENDIX B

The District's Needs

In Terms of Higher-Level Cognitive Questions

The District's Needs

Nomothetic Needs

1. How does one begin to learn how to classify questions?
2. How would one go about fully understanding the basic question, so that you could build on it?
3. Does the teacher have to relate the cognitive questions with the learning experience of the child?
4. Should questions be asked at every level starting at the bottom and working up?
5. In the different disciplines, how much of the subject matter must be regurgitated in facts/specific answers and how can this percentage be cut down to ask higher level questions?
6. When is memorization necessary?
7. How does the teacher determine what memorization is necessary?
8. Are there materials available that suggest higher level questions to be asked following specific readings?
9. Are there any comparison outlines of higher vs. lower order questions and responses?
10. How does the teacher incorporate these questions into lessons?

11. How do you introduce this type of questioning, if the kids aren't used to it?
12. Will children who are accustomed to literal questioning be able to adjust quickly to higher levels of questioning?
13. Will there be a need for a "transition" sort of questioning strategy?
14. How does the teacher determine what kinds of experience the kids have had in answering these higher-level questions?
15. Would it be helpful to combine subject areas so that the students are forced to transfer and connect ideas?
16. What are some examples of better-type questions and situations in which they may be used?
17. Is there a film of this strategy being used available?
18. When are fact questions appropriate?
19. Do different subject areas require different kinds of questions?
20. How do you start kids thinking on their own?
21. How do you ask questions that will show you that the students understand what they learned?
22. What kinds of questions (at what grade level) can I ask?

23. What can I expect these kids (at this grade level) to know?
24. How do I know when I am expecting too much from a particular kid, or group of kids?
25. How do you evaluate these higher-level questions?
26. How do you evaluate critical thinking?
27. What is a good system to use in interpreting test scores?
28. How can you get kids to organize material besides writing dull outlines on the board?
29. What kinds of questions hold the student's attention?
30. How do I pick out comments from students that can be expanded on and explored?
31. In critical questioning, when do you stop the discussion? When do you let it develop into a project or simply let the discussion go on?
32. What is the rationale for asking these kinds of questions?
33. What if a question you ask affects some child emotionally? Should you try to ignore it, or make a big deal?
34. Should a student always be right when he's inferring something, even though his imagination is outrageous.
35. Is there a certain pattern to organizing a child's thoughts?

36. What questions will make a child go beyond the cognitive level?
37. How do you know when they are beginning to go beyond this level?

Idiographic Needs

1. Why didn't we learn about these questions in college?
2. How can I evaluate my current questioning style?
3. How can I avoid asking questions which I think are higher-level but are still looking for a fact?
4. How do I know which of my questions are good? bad?
5. I'd like to know how to ask better questions, period.
6. How can I begin to organize myself to think in terms of these questions?
7. How can I motivate myself to ask higher-level cognitive questions?
8. How can I sharpen my own critical thinking skills?
9. Is what I teach really going to make a difference?
10. How can what I teach relate to how a child is going to use what I'm teaching?
11. What do you do if it doesn't work?
12. What if the kids don't respond?
13. What if you get off the track?
14. How do I learn to relax with the kids?
15. How do I know exactly when to use this type of

questioning?

16. Are we really free to choose our classroom activities?
17. How can I establish a good rapport with my students?
18. How can I get my students to ask me higher-level questions?
19. How can I get the children to really think about what they're answering me?
20. Can we set up a practice situation so we can try out our ability to ask higher-level questions?
21. How can I become adept at asking more critical questions?
22. Do teachers have too much control over the learning experience?
23. Should students be given more freedom to evaluate?
24. Can students handle freedom?
25. Can this be carried too far?
26. Is there a psychology that this type of questioning entails?

APPENDIX C

Instructional Plans -

Cognitive Questioning in Classrooms

Instructional Plans - Cognitive Questioning in Classrooms

Workshops can vary in a variety of ways - content, approach, number of participants, time, etc. Yet despite the diversity, all workshops have common elements. All must have, for example, an appropriate site, an instructional program, and suitable materials and/or activities. The planner of even the most modest workshop needs to be aware of the full set of planning tasks in order to add necessary emphases or discard irrelevant foci (Ritz, 1970).

The planning phase for this workshop was designed in accordance with guidelines established by the Eastern Regional Institute for Education (ERIE). These are adapted from an earlier model developed by the Association for the Advancement of Science. The content of the ERIE format is science, but Ritz indicates that " . . . it is not limited to this area, it serves as an excellent strategy for teaching any subject matter (1970, p. 8)." The ERIE model incorporates Getzels' (1958) model for change and an orientation that embodies active involvement for the participants.

According to the ERIE guidelines, regardless of

> . . . the actual content of a given workshop, it is recommended that persons responsible for instructional programs make every effort to provide:

1. A maximum of active participant involvement with the content of the program.
2. Exemplary teaching in terms of style.
3. Maximum involvement with the materials of the program.

(Ritz, 1970, p. 28)

In addition, the ERIE guidelines recommend that workshop planners:

1. State objective in behavioral terms.
2. Use A-V reinforcements.
3. Incorporate activities requiring participants to be involved.
4. Give handouts of material.
5. Allow for participant-presenter interaction.
6. Submit instructional plans including: title, credits, rationale, objectives, procedures, and appraisal techniques.

Instructional Plan - Cognitive Questioning

Title

Cognitive Questioning in the Classroom

Credits

Gillin, C.J. and others. Questioneze: Individual or group game for developing questioning skills. Columbus, Ohio: Chas. Merrill, 1972.

Sanders, N.M. Classroom questions: What kind? New York: Harper & Row, 1966.

Hunkins, F.P. Questioning, strategies and techniques. Boston: Allyn Bacon, 1972.

Charles, C.M. Educational psychology: The instructional endeavor. St. Louis, Mo.: Mosby, 1972.

Clymer, T. Current conceptions of reading. In J.A. Figurel (Ed.) Innovation and change in reading instruction, Sixty-seventh yearbook of the National Society for the Study of Education. Chicago: University of Chicago, 1968.

Rationale

Research has shown that almost ninety percent of all classroom questions posed by teachers are at lower cognitive levels. That is, they ask students to recognize, recall, or reorganize only that information which has been explicitly stated or read. For teachers to ask higher level questions it is necessary for them to learn to construct questions that can be answered only if students bring their own experience backgrounds into play. As a result, these questions are open ended rather than closed. Yet, for responses to be appropriate, the incorporation of the explicitly stated facts, after recall and/or reorganization, is necessary. Therefore, teachers can adequately assess the assimilation of facts without asking a myriad of low level questions.

This instructional plan is designed so that teachers will:

1. Become familiar with questioning levels.
2. Recognize the level of questions so that they will be able to evaluate the effectiveness of the questions in their teaching manuals in terms of the cognitive goals of their lessons.
3. Be able to construct their own questions at all levels.

Objectives

General goal: To prepare workshop participants to incorporate a greater number and/or variety of higher level cognitive questions into their teaching repertoires.

Specific instructional objectives: After the workshop the participants will be able to:

1. Arrange in order the five major categories of the Barrett Taxonomy.
2. Classify questions according to the taxonomy categories.
3. Compose questions at all levels of the taxonomy using a variety of data sources.

Procedure - Samples of materials used at end of Appendix C.

1. Introductory lecturette "Six Questions about Questions".

2. Relation of the Barrett Taxonomy to the question levels previously learned in undergraduate reading methods courses.
3. The function of questions in classrooms and the Barrett Taxonomy.
4. Classification of questions for practice. Sharing of responses.
5. Creating questions - stimulus picture on transparency. Group activity. Sharing of responses.
6. Questions, comments, concluding statements.

Appraisal techniques

The achievement of the workshop objectives will be assessed objectively by evaluating the completed worksheets and by the responses to a workshop evaluation form which asks: 1) Did you enjoy the session? 2) Do you plan to use any of the information presented in your classrooms?

In addition, informal evaluation will be based on the observations of participant involvement, comments, and questions asked by the participants.

Sample Workshop Materials

SIX QUESTIONS ABOUT QUESTIONS

1. WHAT IS A QUESTION?

2. HOW ARE QUESTIONS USED IN CLASSROOMS?

3. WHAT ARE GOOD QUESTIONS?

4. HOW DO YOU ASK GOOD QUESTIONS?

5. WHAT ARE THE RESULTS OF GOOD QUESTIONING?

6. HOW CAN TEACHERS PLAN FOR GOOD QUESTIONING IN THEIR CLASSROOMS?

(transparency)

SIX QUESTIONS ABOUT CLASSROOM QUESTIONS

Over ninety percent of all classroom talk has been identified as question-asking and responding.

1. What Is A Question?

Actually, a question is any statement intended to solicit a response of some sort, whether it was given in writing or orally. Hence "Tell me more about China." is actually a question though the punctuation is a period. With this definition in mind, one realizes that questions can also be asked with a gesture, a look, or some body movement. The one chosen to respond can also be identified non-verbally as well as specifically by name.

2. How Are Questions Used?

Since almost all classroom talk-time is spent in the question/answer style, one can assume that questions are used for purposes other than checking the understanding of the lesson. Actually they are used to:

- solicit information
- verify understanding
- lead discussions
- promote creativity
- encourage critical thinking
- apply earlier learnings
- organize & structure classroom activities
- analyze concepts
- synthesize facts into concepts
- evaluate & test
- control turn-taking of students
- control sequence & organization of information

and to generally keep things running smoothly so that learning can take place.

3. What Are Good Questions?

Socrates taught by asking questions with the idea that people already had information in their heads and he asked

questions to help them become aware of what they already knew. For him the question was the "medium of mental massage". That is the essence of a good question. It is not the one that asks something the student either knows or doesn't know, but rather one that leads him to use what he already knows by coaxing the use of higher mental processes. This can be done by composing questions that are:

1. worth answering
2. open-ended
3. focusing on process (How?)
4. focusing on explanations (Why?)
5. focusing on the student's evaluating process
6. designed to help students clarify and/or illustrate
7. broadening their horizons
8. encouraging logical thinking
9. encouraging reflective thinking
10. encouraging critical thinking

4. How Do You Ask Good Questions?

There are several common "errors" in question-asking that have been noted. They are:

1. not planning ahead and writing them down. (A list of a few good questions is a fine lesson plan.)

2. asking too many questions--usually lower levels.

3. not allowing enough time for each question.

4. not allowing time for the students to think before answering. A good question requires some time to reflect before responding.

5. asking a string of related questions without waiting for responses.

6. repeating the question.

7. answering your own question (especially if the "thinking time" silence seems prolonged).

8. repeating students' responses.

5. What Are The Results of Good Questioning?

It takes time to plan good questioning but it is worthwhile in terms of being more effective in the classroom. The rewards are:

1. Less teacher talk - more student response (Flanders).
2. More individualization (even in whole group activity) because students' own experience backgrounds are used in responding to higher level questions.
3. Higher thinking levels.
4. Increased interest levels.
5. Increased cognitive activity.
6. Deeper understandings.
7. Increased retention of learning.
8. Better application of learning.
9. Improved organization and sequence of content.
10. Increased creative thinking.

6. How Can Teachers Improve Classroom Questions?

The best answer is, "By practicing some new question styles and then evaluating them." The tools are easy to obtain since all that is needed is a taxonomy of questions, some examples to use as patterns, and a tape recorder in addition to the regular classroom texts.

1. To start, check the manual questions against the Taxonomy. (One researcher says that 55% will be literal and other 26% will simple ask the student to locate something in the text.)
2. Next, try making up your own questions and check them with the taxonomy.

3. Tape a discussion lesson and check your oral questions. How many? What levels? Keep a tally.

4. Use the taxonomy and try to ask more higher-level questions. (Check yourself on your tape again).

5. Tape the students' questions and classify them. Students often ask higher level questions and the class could be guided to respond to those peer questions.

6. MOST IMPORTANT - Very young children and learning-delayed children can and do think at higher levels. Remember this when having oral lessons. It's their reading skills that are not developed so keep their written questions simple and give them their "mental massage" orally.

ASK A TRIVIAL QUESTION
AND EXPECT A TRIVIAL RESPONSE.

Jerome Bruner

QUESTION LEVELS

READING METHODS TEXT MANUALS	BARRETT TAXONOMY
1. LITERAL	1. LITERAL RECALL RECOGNITION 2. REORGANIZATION
2. INFERENTIAL	3. INFERENTIAL
3. ASSIMILATIVE a.) critical b.) creative	4. EVALUATION 5. APPRECIATION

(transparency)

Q U E S T I O N L E V E L S		
BARRETT TAXONOMY	READING METHODS COURSES READING TEXT MANUALS	VALUES
1. LITERAL a.) Recognition b.) Recall 2. REORGANIZATION	1. LITERAL	1. SPECIFIC
3. INFERENTIAL	2. INFERENTIAL	2. GENERAL
4. EVALUATION	3. ASSIMILATIVE a.) Critical b.) Creative	3. VALUES
5. APPRECIATION		

(transparency)

In reading methods courses, textbook manuals, and lists of behavioral objectives, three kinds of questions are usually mentioned: 1) literal, 2) inferential, and 3) assimilative which includes critical questioning for factual material and creative questions for stories, poems, plays, etc.

The reading manuals are usually very helpful to the teacher in guiding questioning, but the other subject areas rarely have manuals with such explicit help.

Teachers often try to use the literal, inferential, and assimilative categories in the content areas but find there is need for clarification or examples of the categories.

The Barrett Taxonomy (Clymer, 1968), designed originally to assist classroom teachers in developing comprehension and/or test questions for reading, is especially useful for classroom questioning in other content areas as well.

The first two categories, literal comprehension and reorganization, deal with the facts as presented orally or in the books the students have read, and thus result in closed questions; that is, questions that have a single correct response. A possible exception is Synthesizing (2.4) if the combination of facts presented

leads to a totally new idea. Under those conditions, the student has creatively added his uniqueness to the presented information. However, in classroom learning, synthesis is most often the putting together of facts to reach a generalization or concept or definition.

The remaining categories will always involve the student's own background of experiences. As a result, it is possible to have as many different, but correct, responses as there are students present, since each brings to school a different background of home, family, friends, and learnings. These categories therefore lead to the development of open-ended questions.

Although the classroom teacher who focuses on these higher questions has to allow more time for the varied responses, the degree of learning that can be evaluated is at least as great, and often greater, since adequate response to questions at these levels must invorporate the information that could have been gathered by "fact" questions. Therefore, as much or more can be gained for teacher and for students from a lesson with only a few higher level questions and the varied responses, since all the "facts" are checked <u>while</u> the students get practice in using higher cognitive thinking processes.

THE BARRETT TAXONOMY OF COGNITIVE AND AFFECTIVE DIMENSIONS OF READING COMPREHENSION

Clymer, 1968

1.0 Literal Comprehension
- 1.1 Recognition
  - 1.11 Recognition of Details
  - 1.12 Recognition of Main Ideas
  - 1.13 Recognition of a Sequence
  - 1.14 Recognition of Comparison
  - 1.15 Recognition of Cause & Effect Relationships
  - 1.16 Recognition of Character Traits
- 1.2 Recall
  - 1.21 Recall of Details
  - 1.22 Recall of Main Ideas
  - 1.23 Recall of a Sequence
  - 1.24 Recall of Comparisons
  - 1.25 Recall of Cause & Effect Relationships
  - 1.26 Recall of Character Traits

2.0 Reorganization
- 2.1 Classifying
- 2.2 Outlining
- 2.3 Summarizing
- 2.4 Synthesizing

3.0 Inferential Comprehension
- 3.1 Inferring Supporting
- 3.2 Inferring Main Ideas
- 3.3 Inferring Sequence
- 3.4 Inferring Comparisons
- 3.5 Inferring Cause & Effect Relationships
- 3.6 Inferring Character Traits
- 3.7 Predicting Outcomes
- 3.8 Interpreting Figurative Language

4.0 Evaluation
- 4.1 Judgments of Reality or Fantasy
- 4.2 Judgments of Fact or Opinion
- 4.3 Judgments of Adequacy and Validity
- 4.4 Judgments of Appropriateness
- 4.5 Judgments of Worth, Desirability and Acceptabilty

5.0 Appreciation
- 5.1 Emotional Response to the Content
- 5.2 Identification with Characters or Incidents
- 5.3 Reactions to the Author's Use of Language
- 5.4 Imagery

PLEASE DO THE FOLLOWING:

1. IDENTIFY THE TYPE OF QUESTION ACCORDING TO THE BARRETT TAXONOMY.

2. NUMBER THE QUESTIONS 1 ⟶ 5 ACCORDING TO THE BARRETT HIERARCHY WITH (1) REPRESENTING THE LOWEST LEVEL.

QUESTIONS:

WHAT BEST JUSTIFIES THE ACTION TAKEN BY THE SOUTHERN STATES IN SECEDING FROM THE UNION?

CLASSIFY THE FOLLOWING STATES ACCORDING TO THEIR GEOGRAPHIC LOCATION.

HOW MANY STATES ARE THERE IN THE U.S.?

OF ALL THE STATES WE'VE STUDIED, WHICH IS YOUR FAVORITE?

HOW ARE THE NEW ENGLAND STATES LIKE THE MIDDLE-ATLANTIC STATES?

(transparency)

Worksheet - A.M. Session - Cognitive #1

Please do the following:

1. Identify the level of a question according to the Barrett Taxonomy.

2. Rank the questions (1-5) according to the Barrett Taxonomy.

Sample:

Literal - 1 Who discovered America?

Questions:

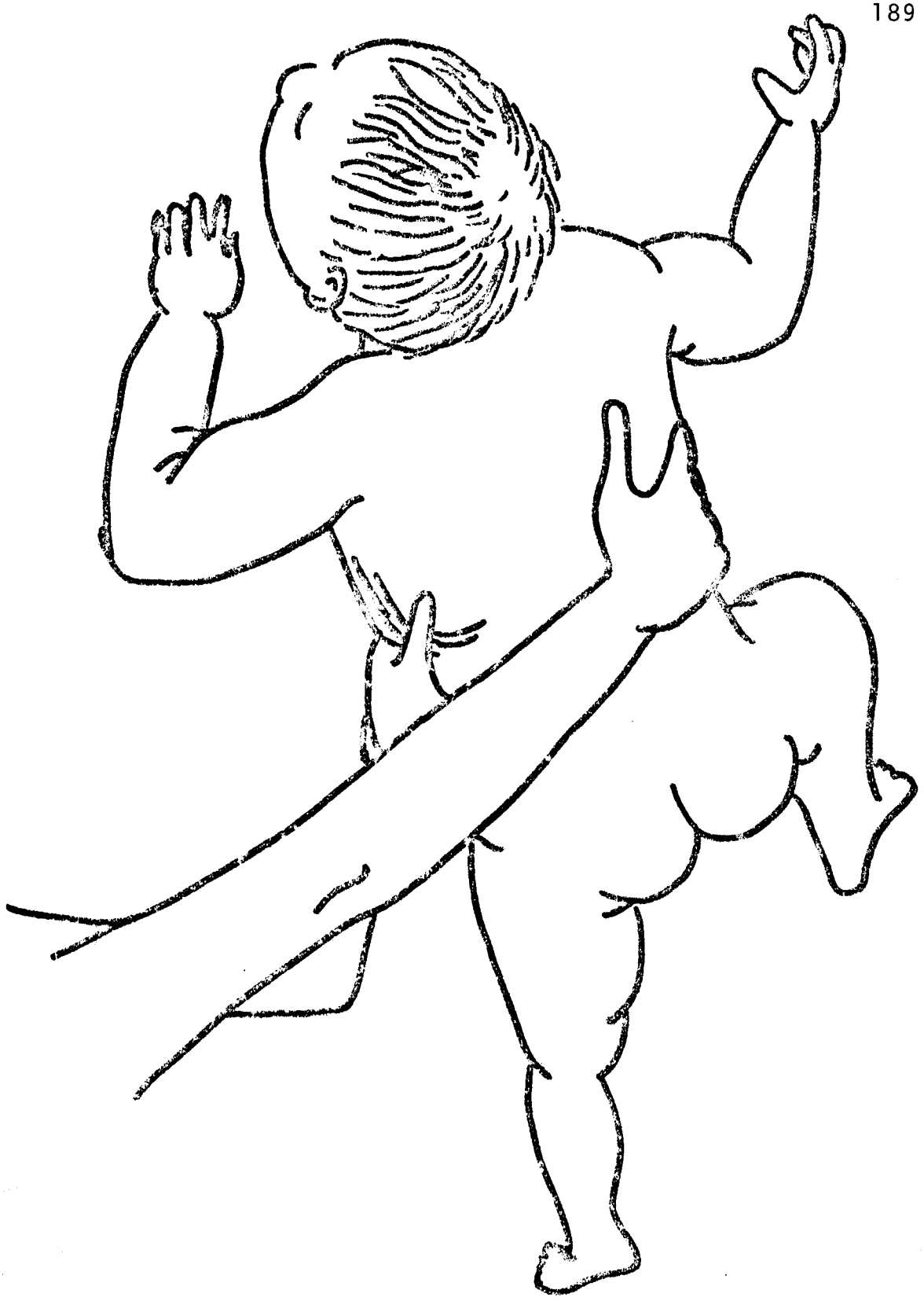
_____ What best justifies the action taken by the southern states in seceding from the union?

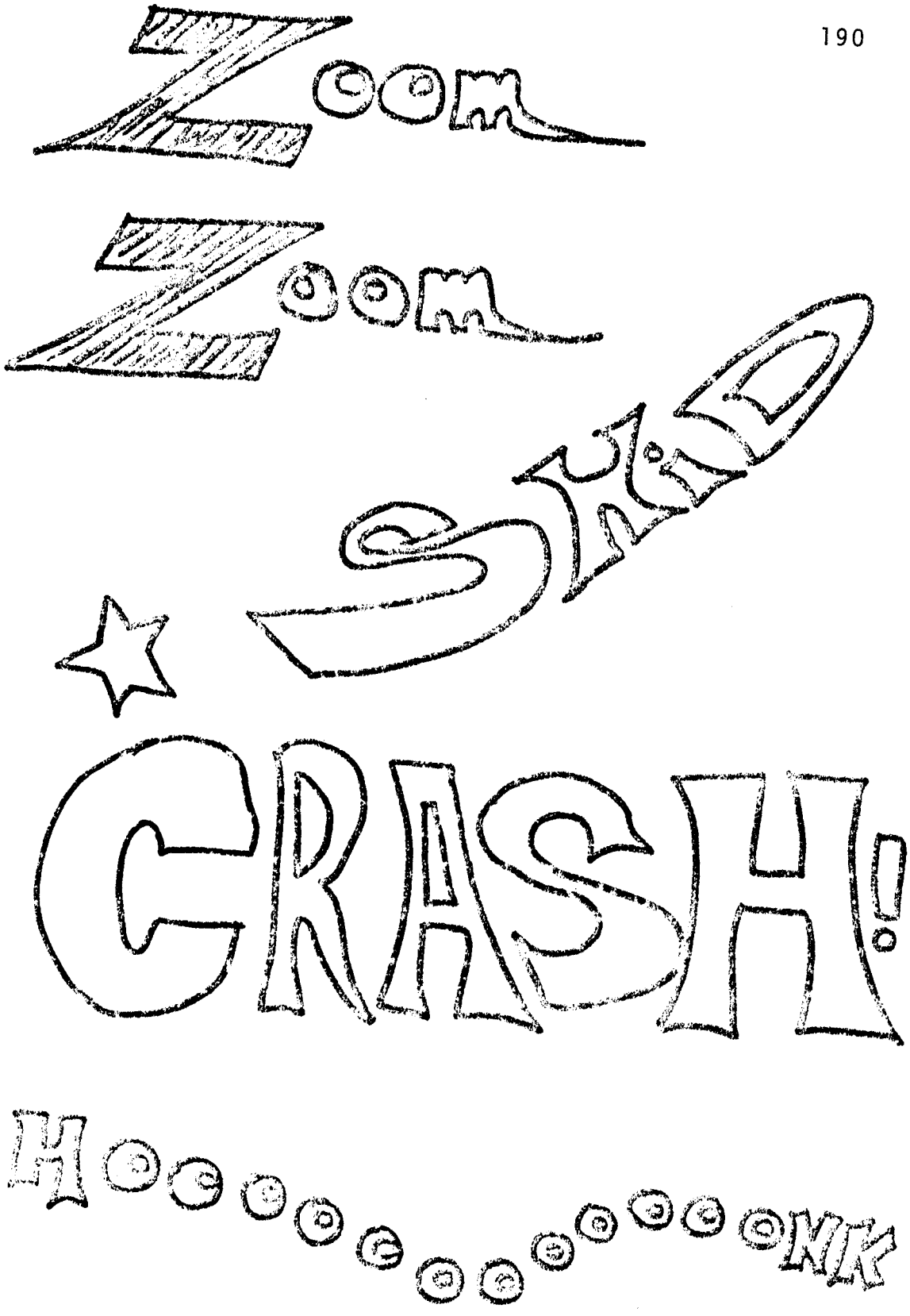
_____ Classify the following states according to their geographic location.

_____ How many states are in the U.S.?

_____ Of all the states studied, which is your favorite?

_____ How are the New England States like the Middle Atlantic States?




ZOOM
ZOOM
SKID
CRASH!
HOOO

Worksheet - A.M. Session - Cognitive #2

Using the picture, please write one question for each of the levels of the Barrett Taxonomy.

1. Literal Comprehension

Low

2. Reorganization

—

3. Inferential

High

4. Evaluation

5. Appreciation

APPENDIX D

Workshop Outlines

Workshop Outlines

For workshop Approach A (traditional) the consultants had designed their individual presentations as described in the definition of terms in Chapter 1. The outline for the traditional approach is as follows:

1. Lecture - "Six Questions about Questions" (transparency).
2. Introduction to Barrett Taxonomy (handout).
3. Relation of Barrett to levels of questions from undergraduate methods courses (transparency).
4. Classifying sample questions (transparency and worksheet).
5. Creating questions at all levels (transparency pictures and Worksheet #2).
6. Questions, comments, concluding remarks.

In order to keep the content of Approach A and B constant, the materials used in the coordinated session, Approach B, were the same as in the traditional session, Approach A. These have been described in detail in Appendix C.

Concrete application of learning, which had been identified as a critical activity through the literature review, was added in the experimental session by having

each participant write cognitive questions at each of the Barrett levels as well as a values-clarifying question using one of their own classroom texts as a data source instead of a second picture transparency. This was done to make the question writing practice directly applicable to the participants' ongoing instructional activities and to insure the transfer of learning from the workshop environment to the classroom environment.

In order to meet the conditions for the experimental approach, Workshop B, the consultants met to coordinate the content of the two presentations. It was decided that the content of the session on values-clarifying questions (King, 1974) and the session on cognitive questioning could best be coordinated by focusing on the interrelation of cognition and affect as described in Chapter II. The workshop presentation would be conducted by both consultants working together in a sequence of activities and by each responding to, and building upon, the information presented by the other. The theme of this session was adopted from the title of Rubin's (1973) book, Facts and Feelings in the Classroom.

The outline for this coordinated session is as follows:

1. Lecturette - Confluent Education
2. Questions in the classroom (definitions) - Cognitive
   Values (King, 1974)
3. Establishing psychological safety for participants (King, 1974).
4. How information is used in classrooms. Utilization of facts, rather than accumulation of facts stressed by focusing on the higher level questions. Presentation of the lecturette on cognitive questioning and the Barrett Taxonomy (see Appendix C).
5. Affective lecturette (King, 1974).
6. Classification of questions (see Appendix C) with addition of this question: "Which of these questions is also a values question?" This clearly demonstrates to the participants that a cognitive question can also function as a values question.
7. Creating both cognitive and values questions from: a) picture stimulus
   b) classroom textbooks

   (Examples given from expanded Barrett Taxonomy, Appendix A).
8. Concluding comments, questions, etc.

This workshop design meets the criteria that had been established.

1. It was concrete in that application to classroom activites was demonstrated and practiced thereby insuring transfer of learning from workshop to classroom. It dealt with "how to do it" as well as "what to do".
2. Idiographic as well as nomothetic needs of participants were identified and incorporated into the format. This concretely demonstrated the reciprocity of affect and cognition at all learning levels.
3. The coordination of the topics further demonstrated the interrelation of affect and cognition in teaching-learning situations.

HUMANISTIC EDUCATORS SAY --

MAN IS A SENSING, FEELING, THINKING, AND ACTING BEING

and that

MAN'S FEELINGS MUST BE INTEGRATED WITH COGNITIVE LEARNING

CONFLUENT EDUCATION

THE FLOWING TOGETHER OF COGNITIVE AND AFFECTIVE ELEMENTS

IN HUMAN LEARNING

RESULTING IN --

EDUCATION OF THE TOTAL MAN.

(transparency)

QUESTIONS

HIGHER LEVEL COGNITIVE QUESTIONS REQUIRE THE LEARNER TO:

1. ADD INFORMATION FROM HIS OWN BACKGROUND OF FACTS AND FEELINGS TO INFORMATION THAT IS EXPLICITLY STATED IN THE LEARNING EXPERIENCE.

2. MAKE AN EVALUATIVE JUDGEMENT USING EXTERNAL AND/OR INTERNAL CRITERIA.

3. RESPOND EMOTIONALLY OR AESTHETICALLY TO THE LEARNING EXPERIENCE.

VALUES-CLARIFYING QUESTIONS

1. ASKS ABOUT A LEARNER'S OWN IDEAS, ACTIONS, OR FEELINGS.

2. CONTAINS THE WORD "YOU".
(WHAT DO YOU THINK / LIKE / WANT / FEEL)

3. HAS NO "RIGHT" ANSWER; ONLY THE LEARNER KNOWS HIS RESPONSE; EACH LEARNER MAY HAVE A DIFFERENT RESPONSE.

(transparency)

Worksheet - P.M. Session

Please do the following:

1. Identify the level of a question according to the Barrett Taxonomy.
2. Rank the questions (1-5) according to the Barrett Taxonomy.
3. Which of these is a values question?

Sample

Literal - 1 Who discovered America?

Questions:

_____ What best justifies the action taken by the southern states in seceding from the union?

_____ Classify the following states according to their geographic location.

_____ How many states are in the U.S.?

_____ Of all the states studies, which is your favorite?

_____ How are the New England States like the Middle Atlantic States?

Questioning Examples: Primary Level

Reading: Open Highways: Rolling Along; "A New Place for Old Comic Books" book 1, part 2, p. 33.

Lit.----- Why did mother want Andy and Rose to get rid of their comic books?
Reorg.--- What has happened so far?
Inf.----- What are some of the ways that neatness can help you get along with other people?
Eval.---- Was Andy's and Rose's mother being fair?
Appr.---- Did you like or dislike the story?
V.-C.---- How many of you left a messy room this morning? Teachers too! What are some of the messy habits other people have that make you angry?

Social Studies: The Contemporary Social Science Curriculum: Families and Their Needs; "Clothes for the Family" graded, p. 91.

Lit.----- What are the people wearing?
Reorg.--- Which of the following clothes would you wear on a rainy day?
Inf.----- What's the weather like in this land?
Eval.---- Why do some people wear more clothes than other people?
Appr.---- Of all the clothes the author mentioned in the sto-y, which were the most interesting?
V.-C.---- If you were going to a costume party, what kind of clothes would you pick to go in?

Science: Concepts in Science; "The Eye as the Organ of Sight" red book, grade 2, p. 73.

Lit.----- What does the diagram on page 73 represent?
Reorg.--- Compare your eyes to the diagram.
Inf.----- What does light have to do with seeing?
Eval.---- Do you think that the color of the eye has anything to do with seeing?
Appr.---- Why is "reflected" a good term here?
V.-C.---- What would you rather lose if you had to: your eyes (sight), your ears (hearing), or your tongue (speech)?

Questioning Examples: Middle Level

Reading: New Basic Readers: More Roads To Follow; "It's a Wolf", book 3, part 2; p. 68.

Lit.----- What caused Penny and Peter to run?
Reorg.--- In your own words, tell why they were afraid.
Inf.----- What is there about some animals that makes people afraid?
Eval.---- Could this story have really happened?
Appr.---- What part of the story was the most exciting?
V.-C.---- Have you ever pretended that you knew something that you really did not know?

Social Studies: The Contemporary Social Science Curriculum; People Use the Earth; "Problems of the Cities", grade 3, p. 171.

Lit.----- What cities are mentioned in the story?
Reorg.--- Using this list, which city had which problem?
Inf.----- Compare St. Louis with Mexico City.
Eval.---- Which of the cities had the worst problems?
Appr.---- Which parts of the story were sad?
V.-C.---- If you had the power to change our city to make it better, what would you change?

Science: Concepts in Science; "A Drop of Rain:, orange book, grade 4, p. 76.

Lit.----- In what state is the water from the bottom to the top of the chamber? From the top to the bottom?
Reorg.--- What makes the water move?
Inf.----- How can the water droplets be made larger?
Eval.---- Based on what we learned from the experiment, are the raindrops we see in cartoons and the comic strips accurate?
Appr.---- Did you like this experiment?
V.-C.---- What are some things you can do on rainy days, so that it's not boring?

Questioning Examples: Upper Level

Reading: Open Highways: "I Swam for 21 Hours", book 8, p. 35.

Lit.----- What was Marilyn Bell doing on September 8?
Reorg.--- Divide the story into its three main parts.
Inf.----- How is practice related to success?
Eval.---- What strange ideas did Marilyn have?
Appr.---- How did you feel about Marilyn?
V.-C.---- Did you ever quit? What were the circumstances?

Social Studies: The Contemporary Social Science Curriculum: Man and Change: "How Technology Affects Man", grade 7, p. 161.

Lit.----- Using the story, make a list of all the ways technology has affected man.
Reorg.--- Organize the list into main heads and subheads to form an outline.
Inf.----- What might have happened if man hadn't moved to cities?
Eval.---- Do you think city life has anything to do with pollution? Back-up your answer with facts from other sources.
Appr.---- How did the author cause you to think about pollution?
V.-C.---- Of all the electrical appliances you have, which would you be willing to give up to conserve energy? Which wouldn't you be willing to give up?

Science: Concepts in Science: "Code of Heredity", brown book, grade 6, p. 326.

Lit.----- Define heredity.
Reorg.--- In your own words, what does D.N.A. do?
Inf.----- What does looking at a child tell us about his parents?
Eval.---- Which ideas about how living things change are still accepted? Which are no longer believed?
Appr.---- Why is "chip off the old block" a good descriptive phrase?
V.-C.---- Which of your inherited traits are you most proud of? If you had the power to change some of your inherited traits, which ones would you choose to change?

WORKSHEET P.M. SESSION

Please list your grade level:

Text Used: Story Used:

In your own words, please define:

1. literal level questions -

2. reorganization questions -

3. inferential questions -

4. evaluation questions -

5. appreciation questions -

6. values-clarifying questions -

Using the story you have chosen from your text, write one question for each level. (1-6) Use the back of this sheet if necessary.

WORKSHOP FEEDBACK SHEET

Morning session attended:

Did you enjoy the session?

Will you be using some of the ideas shared in your classroom?

Comments:

Afternoon session attended:

Did you enjoy the session?

Will you be using some of the ideas shared in your classroom?

Comments:

APPENDIX E

Description of the Indices, Reliability and Validity of the Myers-Briggs Type Indicator

(Test manual. Meyers, 1962)

Description of the Indices, Reliability and Validity of the Myers-Briggs Type Indicator

Indices

The Indicator contains spearate indices for determining each of the four basic preferences which, under this theory, structure the individual's personality.

Index	Preference as between	Affects individual's choice as to
EI	Extraversion or Introversion	Whether to direct perception and judgment upon environment or world of ideas
SN	Sensing or Intuition	Which of these two kinds of perception to rely on
TF	Thinking or Feeling	Which of these two kinds of judgment to rely on
JP	Judgment or Perception	Whether to use judging or perceptive attitude for dealing with environment

The EI index is designed to reflect whether the person is an extravert or an introvert in the sense intended by Jung, who coined the terms. The extravert is oriented primarily to the outer world, and thus tends to focus his perception and judgment upon people and things. The introvert is oriented primarily to the inner world

postulated in Jungian theory, and thus tends to focus his perception and judgment upon concepts and ideas.

The SN index is designed to reflect the person's preference as between two opposite ways of perceiving, i.e., whether he relies primarily on the familiar process of sensing, by which he is made aware of things directly through one or another of his five senses, or primarily on the less obvious process of intuition, which is understood as indirect perception by way of the unconscious, with the emphasis on ideas or associations which the unconscious tacks on to the outside things perceived.

The TF index is designed to reflect the person's preference as between two opposite ways of judging, i.e., whether he relies primarily upon thinking, which discriminates impersonally between true and false, or primarily upon feeling, which discriminates between values and not-values.

The JP index is designed to reflect whether the person relies primarily upon a judging process (T or F) or upon a perceptive process (S or N) in his dealings with the outer world, that is, in the extraverted part of his life.

In terms of the theory, a person may reasonably be expected to develop most skill with the processes he

prefers to use and in the areas where he prefers to use them. If he prefers E, he should be more adult and effective in dealing with his environment than with ideas. If he prefers S, he should be more effective in perceiving facts than possibilities. If he prefers T, he should be more adult in his thinking judgments than in his feeling judgments. If he prefers J, he should be more skillful at ordering his environment than in adapting to it and conversely.

The main purpose of the Indicator is to ascertain a person's basic preferences. EI, SN, TF and JP are therefore indices designed to point one way or the other, rather than scales designed to measure traits. What each is intended to reflect is a habitual choice between opposites, analogous to right or left-handedness. Thus EI means E or I, rather than E to I.

The items of each index offer "forced" choices involving the preference at issue. Responses pointing in opposite idrections bear separate weights of 0, 1 or 2, enabling the evidence in each direction to be separately summed. This device permits (a) control of the effect of omissions, and (b) an item-by-item correction for social desirability, undistorted by omissions, which is described in the section on construction of the Indicator, in Part Three.

Persons with more points for E than for I are classed as extraverts and are said to have E scores, as E 7, E 13, etc. Those with more points for I than for E are classed as introverts and are said to have I scores, as I 7, I 13, etc. Since the EI "score" is based on the difference between the points for E and the points for I, any given person may have either an E score or an I score, but not both.

The letter is considered the most important part of the score, as indicating which of the opposite sides of his nature the person prefers to use, and, presumably, has developed--or can develop--to a higher degree. For instance, E suggests that he enjoys extraverting more than he enjoys introverting, has therefore given his extravert side considerably more practice, is likely to be better at activities involving estraversion, and will probably find a vocation requiring extraversion most satisfying as a life work. The letters from all four scores, each with corresponding implications, make up the type formula, as ENFP, which describes the type.

The numerical portion of the score shows how strongly the preference is reported, which is not necessarily the same thing as how strongly it is felt.

On every index, the scores run in both directions from the zero at the center, where the direction of the

reported preference changes. The ranges are:

E 53 ----- 0 ----- I 59

S 67 ----- 0 ----- N 51

T 49 ----- 0 ----- F 51 (males)
T 61 ----- 0 ----- F 49 (females)

J 55 ----- 0 ----- P 61

The division of each index into two separate scales emphasizes the respectful recognition which type theory accords to opposite kinds of people. Each person is classified in positive terms, by what he likes, not what he lacks. The theory attaches no a priori value judgment to one preference as compared with another, but considers each one valuable and at times indispensable in its own field (Myers, 1962, p. 3).

These basic differences concern the way people prefer to use their minds, specifically the way they use perception and judgment. "Perception" is here understood to include the processes of becoming-aware of things or people or occurrences or ideas, and "judgment" is understood to include the processes of coming-to-conclusions about what has been perceived. Together, perception and judgment thus constitute a large portion of the individual's total mental activity. They must also govern a large portion of his outer behavior, since by definition

his perception determines what he sees in a situation and his judgment determines what he decides to do about it.

Thus behavior is directly affected by the processes of perception and judgment, and it is entirely reasonable that basic differences in perception or judgment should result in corresponding differences in behavior.

A basic difference in the use of perception arises from the fact that, as Jung points out, mankind is equipped with two distinct and sharply contrasting ways of perceiving. There is not only the familiar process of sensing, by which we become aware of things directly through our five senses. There is also the process of intuition, which is indirect perception by way of the unconscious, accompanied by ideas or associations which the unconscious tacks on to the perceptions coming from outside. These unconscious contributions range from the merest masculine "hunch" or "woman's intuition" to the crowing examples of creative art or scientific discovery.

Undoubtedly all persons make use of both sorts of perception. But most individuals, from infancy up, enjoy one way of perceiving more than the other. When people prefer sensing, they find too much of interest in the actuality around them to spend much energy listening for ideas out of nowhere. When people prefer intuition, they are too much interested in all the possibilities

that occur to them to give a whole lot of notice to the actualities. For instance, the reader who confines his attention strictly to what is said here on the page is following the habit of the people who prefer sensing. One who reads between the lines and runs ahead to the possibilities which arise in his own mind is illustrating the way of the people who prefer intuition (Myers, 1962, pp. 51-52).

A similar basic difference, this time in the use of judgment, arises from the existence of two distinct and sharply contrasting ways of coming to conclusions. One way is by the use of thinking, which is a logical process, aimed at an impersonal finding. The other way is by the use of feeling, which is a process of appreciation, equally reasonable in its fashion, bestowing on things a personal, subjective value.

Everyone undoubtedly makes some decisions with thinking and some with feeling. But each person is almost certain to like and trust one way of judging more than the other. If, when one judges these ideas, he concentrates on whether or not they are true, that is thinking-judgment. If one is conscious first of like or dislike, of whether these concepts are sympathetic or antagonistic to other ideas he prizes, that is feeling-judgment.

Whichever judging process a child prefers, whether thinking or feeling, he will use it more often, trust it more implicitly, and be much more ready to obey its dictates. The other kind of judgment will be a sort of minority opinion, half heard and often wholly disregarded.

Thus in the natural course of events, the child who prefers thinking and the child who prefers feeling develop along divergent lines, even when both like the same perceptive process and start with the same perceptions. Each is happiest and most effective in activities that call for the sort of judgments that he is best equipped to make. The child who prefers feeling becomes more adult in the handling of human relationships. The child who prefers thinking becomes more adult in the organization of facts and ideas. And each acquires the surface traits that result from his basic preference for the personal or the impersonal approach to life (Myers, 1962, pp. 52-53).

Reliability

What has been done is to investigate reliability on various levels by the use of a logically-split-half procedure. Each index has been split into halves, taking all available item statistics into consideration and pairing items that most resemble each other and correlate

most highly. The resulting X and Y halves should, therefore, "represent faithfully the total test in all significant respect," as Guilford (1954, p. 373) recommends.

Split-half reliabilities were obtained by applying the Spearman-Brown prophecy formual to obtained correlations between halves. These correlations range from .88 to .70 with a single correlation of .44 for the TF scale with underachieving eighth graders.

These reliabilities appear creditable for an instrument of this sort, representing in general the upper range of coefficients found in self-report instruments of similar length. It may be noted that while a wide range of age, intellectual ability and socio-economic status is included, the only coefficients below .75 are for the underachieving eighth grade and the non-prep twelfth and that much of the lowest values for these groups are on TF. The possibility would seem to exist that the relative uncertainty on TF may reflect a lesser development of the judging process, which may prove to be a significant characteristic of such samples (Myers, 1962, p. 20).

Two aspects are worth noting. One is the systematic way in which reliabilities vary with the character of the sample. The clearly superior twelfth grade and

college samples, comprising boys who were National Merit finalists, girls in advanced twelfth grade courses, and random sample of 100 each from the highly-selected freshman classes of Brown and Pembroke, have reliabilities from .80 to .94 with the median at .85. The regular academic twelfth grade samples have reliabilities from .76 to .88, with the median at .81. The boys in the non-prep twelfth grade and in the intelligent but low-achieving eighth grade sample have reliabilities from .80 down to .44, with the median at .73. The contrasts may be due to differences in understanding, vocabulary, motivation, etc., or to actual differences in type development, or to all of these factors in combination.

A second point concerns the TF index, which, in the least able sample, has a strikingly lower reliability than any other index. Since TF pulls up to parity with other indices in the sample from Brown and Pembroke, the unreliability would not seem to lie in the TF index itself. More probably the low coefficients reflect the fact that the development of judgment (whether T or F) is one of the slowest and most reluctant achievements in the process of growing up (Myers, 1962, pp. 20-21).

In addition, the Gray-Wheelwright Psychological Type Questionnaire was constructed by two Jungian analysts

on the west coast, at about the same time as the Type Indicator was being constructed on the east coast, quite independently and with no intercommunication. It has the same purpose as the Indicator, to identify the Jungian types, and proceeds by inquiring to the subject's preferences as between extraversion and introversion, sensation and intuition, and thinking and feeling. It has no scale for JP and thus does not reflect the important differences in behavior that result from using judgment rather than perception (or perception rather than judgment) in the extraverted part of one's life. On its scales corresponding to EI, SN and TF, split-half reliabilities are markedly lower than any computed for the Indicator. But the true variance of these scales can be assumed to reflect, as faithfully as the difficulties of test construction permit, Gray's and Wheelwright's conception of the essential nature of the Jungian opposites.

A study in which the Type Indicator and the 14th edition of the Gray-Wheelwright were both administered to 47 male students at Golden Gate College is reported by Stricker & Ross (1962). The observed intercorrelations reported in the test manual range from .84 for EI and JP, .81 for TF, and .62 for SN (Myers, 1962, p. 21).

Reliability was further established by correlating

the Type Indicator with the Strong Vocational Blank, the Allport-Vernon-Lindzey Study of Values, the Edwards Personal Preference Schedule, and the Personality Research Inventory.

Validity

In addition the Type Indicator was shown to be concurrently valid by being positively correlated with non-test variables such as faculty ratings, job turn-over, creativity, and scholastic achievement. The figures for all the categories are given in the manual and indicate the test to be adequate in all categories. The manual for the rest reports all figures for reliability and validity completely and is complete in analysis of performance of the various types and should be consulted prior to interpretation of the specific scores (Myers, 1962).

APPENDIX F

Sample of Packet for Teachers

Dear Teacher,

Thank you for participating in the Loyola University Research Project. We realize that at the present time you may be somewhat unsure of what we are doing and your part in it. As you read through the rest of this letter you will find out your part in the plan, but you will not yet learn all the details. That will not be clear to you until early spring. We wish it could be different, but the "secrecy" is necessary because of the experimental design.

After the experiment, all information will be available to you about the group as a whole, and if you wish, about yourself as an individual.

In order to allow you complete privacy, we have a code name on the outside of the envelope and a card inside the envelope with the same name for your records. No one need know who you are unless you wish to identify yourself.

Inside the envelope you will find the following items:

1. A one hour tape. We would like you to tape only on one side a half hour discussion lesson in your classroom. Social studies, science, reading comprehension, literature discussions are generally good areas for this type of lesson. However, you may choose any subject area you wish, provided you plan at least a half hour of discussion with the class.

   These tapes will be returned to you later in the school year, and you will do the same kind of lesson on the other half-hour side.

2. The Myers-Briggs survey for you to complete.

3. The Total Involvement Inventory to be completed.

4. A biographical profile to be completed.

5. A card with your code name to be retained by you.

Side I of the tape and the other items should be returned in the original envelope via school mail to your district reading consultant or to your superintendent, both of whom are cooperating with the university in this research.

Again, we thank you for your help. Hopefully, together we can add some vitally needed information in the field of education.

The Loyola University Researchers

BIOGRAPHICAL DATA

1. Code Name _____

2. Sex: M /___/ male

   F /___/ female

3. Marital Status: M /___/ married

   F /___/ single

4. Date of Birth: /___/ Month

   /___/ Day

   /___/ Year

5. Religion: /___/ Catholic

   /___/ Protestant

   /___/ Jewish

   /___/ Other, please specify _____

6. Citizenship: /___/ Citizen

   /___/ Immigrant

   /___/ Other, please specify _____

7. Teaching level: Please indicate at which level you've done the majority of your teaching.

   /___/ Primary (K-3)

   /___/ Intermediate (4-6)

   /___/ Junior High (7-8)

   /___/ Secondary (9-12)

   /___/ Other, specify _____

8. Years of teaching experience: Please state the total number of full years of contractual teaching, regardless of interruptions or leaves of absence.

   _____

9. Educational Background: Please check the highest education level you've completed.

/___/ Bachelor's degree

/___/ Bachelor's degree plus some post-graduate credits

/___/ Master's degree or equivalent

/___/ Master's degree plus some post-master's credits

/___/ Doctor's degree or equivalent

/___/ Doctor's degree plus some post-doctoral work

10. Institution Type: Where did you do the majority of work for your Bachelor's degree?

/___/ Private non-denominational university (Northwestern, I.I.T.)

/___/ Private religious university (Loyola, De Paul)

/___/ State University (U. of I., Northern)

/___/ Private non-denominational college (Lake Forest, etc.)

/___/ Private religious college (Mundelein, Knox, Concordia)

/___/ State college

/___/ Teachers college (Northeastern)

/___/ Other, specify _____

11. Nationality: What is your national heritage on your natural father's side? _____

What is your national heritage on your natural mother's side? _____

Were your natural father and your natural mother born in the United States? Please check one code in each column:

	Father	Mother
Yes	/___/	/___/
No	/___/	/___/
Don't know	/___/	/___/

12. Guardians: For the most part, by whom were you raised up to the age of 15?

/___/ Both parents

/___/ Mother alone

/___/ Father alone

/___/ Step parent(s)

/___/ Foster parents

/___/ Grandparents

/___/ Other relatives

/___/ Other arrangement, specify _____

13. Geographic Area: In what region of the country did you live most of the time when you were growing up?

/___/ New England (Maine, N.H., Mass., Conn., R.I., Vermont)

/___/ Middle Atlantic (N.Y., N.J., Penn.)

/___/ East North Central (Ohio, Ind., Ill., Mich., Wisc.)

/___/ West North Central (Minn., Iowa, Mo., N.Dak., S.Dak., Nebras., Kan.)

/___/ Mountain (Montana, Idaho, Wyo., Colo., N.Mex., Ariz., Utah, Nev.)

/___/ Pacific (Wash., Oregon, Calif., Alaska, Hawaii)

/___/ South Atlantic (Delaware, Maryland, D.C., Virg., W.Virg., S.Carol., N.Carol., Georgia, Florida)

/___/ East South Central (Kentucky, Tenn., Alabama, Miss.)

/___/ West South Central (Arkansas, Louisiana, Oklahoma, Texas)

/___/ Didn't grow up in U.S., please specify _____

14. Community Size: For the most part, how would you categorize the area where you were raised up to the age of 15?

/___/ very large city (1 million and over)

/___/ large city (250,000 to 1 million)

14. Community Size: (cont.)

/____/ middle-sized city (50,000 to 250,000)

/____/ small city (2,500 to 50,000)

/____/ rural non-farm

/____/ rural

/____/ suburb of a large city

/____/ Other, specify _____

15. Parental Education Levels: What was the highest grade in school completed by your father and your mother? Please check one in each column.

	Father	Mother
no schooling		
8th grade or less		
some high school		
high school graduate		
some college		
college degree		
Master's degree or equivalent		
Doctor's degree or equivalent		
don't know		

16. Parental Occupations: Please check the category that best describes your parents' (guardians') occupation for most of their life. Please check one in each column.

	Father (Guardian)	Mother
professional (doctor, lawyer)		
managerial & proprietors		
craftsman (plumber, carp., etc. & foremen		
semiskilled operative		
clerical, sales		
unskilled worker		
farmer		
doesn't apply		
other (specify)		

17. Parental Annual Income: Please check the income level that best describes your parents/guardians average income for most of their lives. Please check one in each column.

	Father	Mother
Doesn't apply		
Less than $500		
$500 - 999		
$1,000 - 1,999		
$2,000 - 3,999		
$4,000 - 5,999		
$6,000 - 7,999		
$8,000 - 9,999		
$10,000 - 12,999		
$13,000 - 15,999		
$16,000 & over		

THE INVOLVEMENT INVENTORY

Richard Heslin and Brian Blake

Development. The Involvement Inventory is the outgrowth of the first author's curiosity about some differences between himself, his wife and his friends. The differences at first appeared to involve whether people approached life in an active or passive way. However, the differences became more complex when we looked carefully at the people and their orientations. Plato's three-fold view of people seemed to be relevant to the active-passive orientations. He described three kinds of men: philosophers, warriors, and the rest of us. His philosophers were concerned with intellect, his warriors with courage and will, and the rest with self-gratification. In current terminology these emphases are roughly analogous to cognition (ideas), motivation (getting things done), and emotions (feelings).

In order to measure these orientations, statements were written to indicate an active orientation regarding feelings and interpersonal involvement, i.e., an open, expressive, extroverted manner. Statements were also written to measure an active orientation toward objects and the material world, i.e., a task-accomplishing, project-completing set. Finally, statements were written that described a person who was very active in his approach to ideas and the pronouncements he hears from people, i.e., statements indicating an analytic, questioning, examining set.

Thus the Involvement Inventory is based on a philosophy that there are three important phenomena in life with which a person must interact: (1) people, (2) objects, and (3) ideas. The person's comfort and ability to cope with the experiences he has with these phenomena affect whether he is able to reach out to them, grasp them and use them, or is tentative in his approach to them, or even avoids encountering them. These may be thought of as phenomenological arenas in which he may expend whatever amount of energy he chooses in meeting the challenges which present themselves within the arenas.

In summary, the Involvement Inventory measures three characteristics of people:

(A) Affective, or feeling, involvement with people,

(b) Behavioral involvement in accomplishing tasks, and

(c) Cognitive involvement with analyzing pronouncements encountered.

The ABC scales taken together represent a generally active involvement in and orientation toward life. A low scorer on the A scale tends to be affectively passive, emotionally controlled, and interpersonally cautious. A low scorer on the B scale tends to be a follower, finds it difficult to plan ahead, and finds doing projects distasteful. A person who scores low on the C scale tends to be accepting of information he receives, uninterested or unwilling to challenge information that comes to him, and willing to believe pronouncements of others.

The Involvement Inventory has been subjected to extensive testing and refinement. The present version of the instrument has been found to be reliable (A = .76, B = .78, C = .76, total = .78) and valid (e.g., compared to low scorers, high A scale scorers prefer spending spare time with friends, high B scale scorers are involved in far more activities, and high C scale scorers are more likely to reject parental religious and political views). The correlation among the scales is A-B .37, A-C .18, B-C .49, or an average of .34. These correlations indicate moderate overlap in content.

SCORING

The response categories are weighted as follows: Disagree = 1; Unsure, probably disagree = 2; Unsure, probably agree = 3; and agree = 4. For statements that are reversed items, agreement indicates low involvement; the weighting is: Disagree = 4; Unsure, probably disagree = 3; Unsure, probably agree - 2; and Agree = 1. Statements that are reverse weighted appear in the latter portion of each scale. (A scale = statements 1-39, B scale = statements 40-74, C scale = 75-102). The totals of the three scales can be added together for the overall involvement score.

Uses of the Instrument. The Involvement Inventory can be used to explore issues of life style. A person can get some insight into (1) how much energy he is expending beyond meeting the maintenance needs of his life and job, (2) whether that energy is focused in one of the three phenomenological arenas of life and (3) which one or two arenas are the focus of his energy and involvement.

The Involvement Inventory can be used to help a person generate a personal agenda for a workshop if he concludes that he is distributing his time and energy in a way that is not fruitful or if he feels that the way he copes with the three arenas is getting in his way at work or home. Participants in a workshop can be given this inventory on the first day. Scoring of their responses can be done by them or by clerical assistants. It is important that the participants get their scores relatively early so that they can use the information in the workshop. The facilitator may have the participants post their scores on the A, B, and C scales and on the total instrument using newsprint and felt-tipped markers. Make a group frequency

©1973 University Associates

distribution for each of the 4 scores using a chalkboard or newsprint. Have the members form into small groups (2-6 people) to interpret each other's score patterns and check out how the respondent sees his own scores. The instrument is also a useful device to teach the concepts of high and low involvement in each of the three arenas and in combinations of the three.

If the facilitator wishes to compare his group's scores with those of another group, the following norms are included as an example. The group illustrated was composed of 20 individuals functioning on some level as small group facilitators who were involved in a workshop in Montreal. Their backgrounds were fairly diverse and included industrial management, education, the clergy, and clinical psychology. Ages ranged from 25 to 55 years. The medians for this group were: A scale = 116, B scale = 100, and C scale = 86. The median for the total equalled 300. For purposes of identifying significantly high or low scores, the middle fifty per cent ranged from 107 to 122 for the A scale, 88 to 109 for the B scale, and 78 to 92 for the C scale. The total ranged between 289 and 320.

©1973 University Associates

THE INVOLVEMENT INVENTORY
Scoring

1. The A scale (affective or feeling involvement with people) includes items 1 through 39. Items 1 through 19 are weighed differently than items 20 through 39. Draw a line under item 19 on the scoring sheet. Add the checks in each column for items 1 through 19 and place the sum in the spaces below. Multiply each column total by the multiplier beneath it. Add the four products across and put the total in the blank designated (A).

x1	x2	x3	x4	
_____ +	_____ +	_____ +	_____ =	_____ (A)

Draw a line under item 39. Add the checks in each column for items 20 through 39 and proceed as you did with items 1 through 19 (notice that the multipliers are reversed from those for items 1 through 19).

x4	x3	x2	x1	
_____ +	_____ +	_____ +	_____ =	_____ (a)

2. The B scale (Behavioral involvement in accomplishing tasks) includes items 40 through 74. Draw a line under item 57. Proceed with the scoring as above.

x1	x2	x3	x4	
_____	_____	_____	_____ =	_____ (B)

Draw a line under item 74 and proceed as above.

x4	x3	x2	x1	
_____ +	_____ +	_____ +	_____ =	_____ (b)

3. The C scale (Cognitive involvement with analyzing pronouncements encountered) includes items 75 through 102. Draw a line under item 91 and proceed with the scoring as above.

x1	x2	x3	x4	
_____ +	_____ +	_____ +	_____ =	_____ (C)

Total the remaining columns and proceed as above.

x4	x3	x2	x1	
_____ +	_____ +	_____ +	_____	= _____ (c)

4. Obtain scale scores by adding the totals for each two-part scale. Then, obtain the total involvement score by adding the three scale scores.

A + a = _____
B + b = _____
C + c = _____
Total involvement score = _____

©1973 University Associates

INVOLVEMENT INVENTORY

Answer Sheet

	Disagree	Unsure, Probably Disagree	Unsure, Probably Agree	Agree
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				
31.				
32.				
33.				
34.				
35.				
36.				
37.				
38.				
39.				
40.				
41.				
42.				
43.				
44.				
45.				
46.				
47.				
48.				
49.				
50.				
51.				
52.				
53.				
54.				
55.				
56.				
57.				
58.				
59.				
60.				
61.				
62.				
63.				
64.				
65.				
66.				
67.				
68.				
69.				
70.				
71.				
72.				
73.				
74.				
75.				
76.				
77.				
78.				
79.				
80.				
81.				
82.				
83.				
84.				
85.				
86.				
87.				
88.				
89.				
90.				
91.				
92.				
93.				
94.				
95.				
96.				
97.				
98.				
99.				
100.				
101.				
102.				

INVOLVEMENT INVENTORY

Richard Heslin and Brian Blake

Directions: Indicate your level of agreement with each statement by placing a check in the appropriate space on the answer sheet. Do not spend a lot of time on any one item. Respond with your initial reaction.

1. I like to get close to people.
2. I find it easy to express affection.
3. When I become angry, people know it.
4. When I am happy, I like to shout and whoop it up.
5. I am the kind of person who would shout a friend's name across a crowded room if I saw him come in the door.
6. I know I would stand up in a group and call a liar a liar.
7. I enjoy the shoulder to shoulder contact with other people in a crowded elevator.
8. The wise thing for a person to do is argue his case with a policeman who has pulled him over for speeding.
9. I like to flirt with someone I find attractive even if I'm not serious.
10. I am an expressive person.
11. I prefer dogs to cats.
12. I have struck up a conversation with another person while waiting for an elevator.
13. The thought of participating in one of these "sensitivity training" groups where people tell each other exactly how they feel really appeals to me.
14. If someone is driving down the street and sees a friend walking in the opposite direction, he should honk his horn and wave to him.
15. It is a thrill to walk into a party alone with a large group already there.
16. I like to dance the latest dances at a party.
17. If I am required to have continual close contact with someone who has irritating habits, I would bring them to his attention.
18. After I have been reading for some time, I have to spend some time talking with someone, otherwise I feel lonely.
19. If I were emotionally attached to someone, I could sing a song or say a poem to him (her).
20. I get nervous when people get personal with me.
21. I am able to hide my feelings when I feel sad or angry.
22. People consider me a serious person.
23. When I am angry, I become quiet.
24. I never am wholly relaxed with other people.
25. I wish I were more relaxed and free wheeling in my dealing with my friends.

26. I have never spoken harshly to anyone.
27. If a friend of mine was concerned about something that he was embarrassed to speak about, I would probably let him work it out himself.
28. I become embarrassed when the topic of conversation touches on something the other person wants to avoid.
29. If someone challenged something I said in a decidedly hostile manner, I would probably break off the conversation at the first convenient opportunity.
30. It is best to forget an unpleasant person.
31. I get as much kick out of watching an exciting game of football or basketball as I do playing a game.
32. Even though I may want to, I feel nervous about putting my arm around the shoulder of a friend.
33. There are many times when I have held back from saying what I knew I should say because I didn't want to hurt someone's feelings.
34. If a person does something to hurt a friend, he should do something to make it up to him rather than mentioning or apologizing for the hurt.
35. If I were riding on a train and the car I was in had only one of a pair of seats empty, I would go on to another car looking for a double seat that was empty so that I wouldn't have to sit with someone.
36. I am never quite sure how to handle it when someone flirts with me.
37. If a good looking married man puts his arm around a woman in a friendly manner while talking to her, she should disengage herself at the first appropriate chance.
38. When people tease me in a group, I often do not know what to say in response.
39. I prefer watching television to sitting around and talking.
40. I always have at least four projects going at once.
41. I am the one who gets others going and in action.
42. I tend to take charge in my groups and direct the others.
43. I like to take risks.
44. I would rather build something than read a novel.
45. I have a very strong need to run things and organize things, even though doing so cuts into time I might devote to other activities.
46. I love to repair things.
47. I love to work with my hands building things.
48. I have strong "arts and crafts" interests.
49. I do good work with my hands.
50. Nothing is quite so enjoyable as winning in competition.
51. I enjoy persuading people.
52. I enjoy playing competitive athletics.
53. It would be fun to try to make a radio (or woman's suit) using only a very basic blueprint (or pattern).
54. As an accomplishment, I get a bigger kick out of the Panama Canal than out of the Theory of Evolution.
55. Even though I may delegate tasks to people who are helping me, it makes me nervous to do so because I know if I want it done right, I should do it myself.

©1973 University Associates

56. I find that I work faster than most people I know.
57. I have always enjoyed constructing model airplanes, ships, cars, and things like that.
58. I prefer to follow and let someone else take the lead.
59. I like to keep my risk low.
60. I prefer to be involved in an activity that another person rather than myself has organized.
61. I doubt that I could produce and market a product successfully.
62. I would rather read a play than make something.
63. I wouldn't know where to begin if I had to build something like a fireplace.
64. I avoid taking chances.
65. I would rather play solitaire than build a birdhouse.
66. I prefer to join a group that is already well established, rather than join a new one.
67. For me the greatest joy is in finding out about things rather than in doing things.
68. Life is so short that we should spend more time enjoying it and less time rushing around doing various projects.
69. I average more than seven hours of sleep a night.
70. I prefer to stick with one task until it is done before taking on another task.
71. I find it more gratifying to work out a successful compromise with the opposition, than to compete with and defeat them.
72. When I am bored, I like to take a nap.
73. True contentment lies in coming to a harmonious adjustment with life rather than continually trying to "improve" it.
74. I envy the people in some religious orders who have time for peaceful contemplation and well-organized daily routine.
75. I love to try to spot the logical flaw in TV commercials.
76. You take a big chance if you don't listen to more than one version about something.
77. I would not hesitate to write to any source or official to get the information I need on some problem.
78. I try to read two or three versions of a problem I am trying to understand.
79. I enjoy debating issues.
80. I enjoy analyzing two opposing views to find where they differ and where they agree.
81. When someone tells me something that does not sound quite right, I often check his source.
82. My acquaintances turn to me for new slants on the issues of the day.
83. I have more information about what is going on than my associates.
84. It is almost always worth the effort to dig out the facts yourself by reading a number of viewpoints on an issue.
85. I don't believe that any religion is the one true religion.
86. I don't believe in life after death.
87. It is a good idea to read one or two foreign newspapers as a check on our Associated Press and United Press International dominated newspapers.

88. Governmental response to such things as air pollution, water pollution, pesticide poisoning, and population explosion leads one to believe that it does not have the public welfare as its main interest.
89. It is fun to search far and wide to gather in all of the appropriate information about a topic to be evaluated.
90. I like a friendly argument about some issue of the day.
91. If people were forced to describe me as either short-tempered or overcritical they would probably say that I am overcritical.
92. I have trouble finding things to criticize in something I read.
93. Most of what I read seems reasonable to me.
94. I wish someone would put out a book of known facts so that people would know what is right these days.
95. I don't like to argue ideas.
96. You should take the expert's word on things unless you know for sure that they are wrong.
97. I would rather read a summary of the facts in an area than try to wade through the details myself.
98. I get almost all of my news information from television.
99. As with most people, 95 percent of my opinions come from personal acquaintances.
100. Once I have made up my mind on an issue, I stick to it.
101. If people were forced to describe me as either selfish or narrow minded, they would probably say that I am narrow minded.
102. Most of my acquaintances would describe me as productive rather than as individualistic.

© 1973 University Associates

MYERS-BRIGGS TYPE INDICATOR (F)

READ THESE DIRECTIONS FIRST:

This is a test to show which sides of your personality you have developed the most.
The answer you choose to any question is neither "right" nor "wrong." It simply helps to point out what type of person you are, and therefore where your special strengths lie and what kinds of work you may like to do.
For each question, choose the answer which comes closest to how you usually feel or act. Mark your choice on the separate answer sheet, as shown in the samples below:

Sample Question	Sample Answer Sheet
167. Are your interests (A) few and lasting	(B) varied
Form F Answer Sheet	Form Fs Answer Sheet
A B 167 = ▬	A B 167 [▌

If your interests are varied, you would mark answer "B" as it is marked above. If they are few and lasting, you would mark "A." Be sure that each mark is black and completely fills the answer space. If you change an answer, be sure that all previous marks are completely erased. Incomplete erasures may be read as intended answers.

If you find a question where you cannot choose, do not mark both answers. Just skip the question and go on.

IF YOUR ANSWER SHEET IS FORM F ...

Fill in all facts (Name, etc.) called for at the top of the answer sheet. Then open your test booklet, start with Question 1, and work straight to the end of the test without stopping, recording your answers on the separate answer sheet (marked Form F).

IF YOUR ANSWER SHEET IS FORM Fs ...

Fill in all the facts (Name, etc.) called for in the center section. Turn your answer sheet so that the corner headed "Print last name .." is at the top right hand corner.

Starting at the arrow on the left, print as many letters of your last name as will fit (up to thirteen) in the large boxes of the Last Name

section. Print one letter in each large box. Do not go beyond the heavy line which separates last name and first name sections even if you cannot complete your last name. If your last name has fewer than thirteen letters, use as many boxes as you need and leave the rest blank.

After you have finished printing as many letters of your last name as will fit in the boxes to the left of the heavy line, print as many letters of your first name as will fit (up to seven), beginning at the heavy line and stopping at the last box on the right. Print one letter in each box. If your first name has fewer than seven letters, use as many boxes as you need and leave the rest blank.

Now look at the columns under each letter you have printed. Each column has a small box for each letter of the alphabet. Go down the column under each letter you have printed, find the small box labeled with the corresponding letter, and blacken that small box. Do this for each letter you have printed in the large boxes across the top.

Now, note the section below where sex, age, and test date are requested. Under "sex," mark Male or Female, as appropriate; then, write in your age and today's date in the large boxes of the age and test date section, and darken the appropriate answer boxes below.

Find the section of your answer sheet headed "Part 1." Open your test booklet, start with Question 1, and work straight to the end of the test without stopping, recording your answers on the separate answer sheet (marked Form Fs).

Educational Testing Service, Princeton, New Jersey

Copyright 1942 by Katharine C. Briggs & Isabel Briggs Myers.
All Rights Reserved.

1. Does following a schedule
   (A) appeal to you
   (B) cramp you

2. Do you usually get on better with
   (A) imaginative people
   (B) realistic people

3. If strangers are staring at you in a crowd, do you
   (A) often become aware of it
   (B) seldom notice it

4. Are you more careful about
   (A) people's feelings
   (B) their rights

5. Are you
   (A) inclined to enjoy deciding things
   (B) just as glad to have circumstances decide a matter for you

6. As a guest, do you more enjoy
   (A) joining in the talk of the group
   (B) talking separately with people you know well

7. When you have more knowledge or skill in something than the people around you, is it more satisfying
   (A) to guard your superior knowledge
   (B) to share it with those who want to learn

8. When you have done all you can to remedy a troublesome situation, are you
   (A) able to stop worrying about it
   (B) still more or less haunted by it

9. If you were asked on a Saturday morning what you were going to do that day, would you
   (A) be able to tell pretty well
   (B) list twice as many things to do as any day can hold
   (C) have to wait and see

10. Do you think on the whole that
    (A) children have the best of it
    (B) life is more interesting for grown-ups

11. In doing something which many other people do, does it appeal more to you
    (A) to do it in the accepted way
    (B) to invent a way of your own

GO ON TO THE NEXT PAGE

12. When you were small, did you
    (A) feel sure of your parents' love and devotion to you
    (B) feel that they admired and approved of some other child more than they did of you

13. Do you
    (A) rather prefer to do things at the last minute
    (B) find it hard on the nerves

14. If a breakdown or mix-up halted a job on which you and a lot of others were working, would your impulse be
    (A) to enjoy the breathing spell
    (B) to look for some part of the work where you could still make progress
    (C) to join the "trouble-shooters" who were wrestling with the difficulty

15. Do you
    (A) show your feelings freely as you go along
    (B) keep them to yourself

16. When you have decided upon a course of action, do you
    (A) reconsider it if unforeseen disadvantages are pointed out to you
    (B) usually put it through to a finish, however it may inconvenience yourself and others

17. In reading for pleasure, do you
    (A) enjoy odd or original ways of saying things
    (B) wish writers would say exactly what they mean

18. In any of the ordinary emergencies of life (not matters of life or death), do you prefer
    (A) to take orders and be helpful
    (B) to give orders and be responsible

19. At parties, do you
    (A) sometimes get bored
    (B) always have fun

20. Is it harder for you to adapt to
    (A) routine
    (B) constant change

21. Would you be more willing to take on a heavy load of extra work for the sake of
    (A) additional comforts and luxuries
    (B) the chance of becoming famous through your work

GO ON TO THE NEXT PAGE

22. Are the things you plan or undertake
(A) almost always things you can finish
(B) frequently things that prove too difficult to carry through

23. Are you more attracted
(A) to a person with a quick and brilliant mind
(B) to a practical person with a lot of horse sense

24. Do you find people in general
(A) slow to appreciate and accept ideas not their own
(B) reasonably open-minded

25. When you have to meet strangers, do you find it
(A) pleasant, or at least easy
(B) something that takes a good deal of effort

26. Are you inclined
(A) to value sentiment above logic
(B) to value logic above sentiment

27. Do you like
(A) to arrange your dates and parties some distance ahead
(B) to be free to do whatever looks like fun at the time

28. In making plans which concern other people, do you prefer
(A) to take them into your confidence
(B) to keep them in the dark till the last possible moment

29. Which of these two is the higher compliment
(A) he is a person of real feeling
(B) he is consistently reasonable

30. When you have to make up your mind about something, do you like to
(A) do it right away
(B) postpone the decision as long as you reasonably can

31. When you run into an unexpected difficulty in something you are doing, do you feel it to be
(A) a piece of bad luck
(B) a nuisance
(C) all in the day's work

32. Do you almost always
(A) enjoy the present moment and make the most of it
(B) feel that something just ahead is more important

33. Are you
(A) easy to get to know
(B) hard to get to know

GO ON TO THE NEXT PAGE

34. With most of the people you know, do you
(A) feel that they mean what they say
(B) feel you must watch for a hidden meaning

35. When you start a big project that is due in a week, do you
(A) take time to list the separate things to be done and the order of doing them
(B) plunge in

36. In solving a personal problem, do you
(A) feel more confident about it if you have asked other people's advice
(B) feel that nobody else is in as good a position to judge as you are

37. Do you admire more the person who is
(A) conventional enough never to make himself conspicuous
(B) too original and individual to care whether he is conspicuous or not

38. Which mistake would be more natural for you
(A) to drift from one thing to another all your life
(B) to stay in a rut that didn't suit you

39. When you run across people who are mistaken in their beliefs, do you feel that
(A) it is your duty to set them right
(B) it is their privilege to be wrong

40. When an attractive chance for leadership comes to you, do you
(A) accept it if it is something you can really swing
(B) sometimes let it slip because you are too modest about your own abilities
(C) or doesn't leadership ever attract you

41. In your crowd, are you
(A) one of the last to hear what is going on
(B) full of news about everybody

42. Are you at your best
(A) when dealing with the unexpected
(B) when following a carefully worked-out plan

43. Does the importance of doing well on a test make it generally
(A) easier for you concentrate and do your best
(B) harder for you to concentrate and do yourself justice

44. In your free hours, do you
(A) very much enjoy stopping somewhere for refreshments
(B) usually want to use the time and money another way

GO ON TO THE NEXT PAGE

45. At the time in your life when things piled up on you the worst, did you find
(A) that you had got into an impossible situation
(B) that by doing only the necessary things you could work your way out

46. Do most of the people you know
(A) take their fair share of praise and blame
(B) grab all the credit they can but shift any blame on to someone else

47. When you are in an embarrassing spot, do you usually
(A) change the subject
(B) turn it into a joke
(C) days later, think of what you should have said

48. Are such emotional "ups and downs" as you may feel
(A) very marked
(B) rather moderate

49. Do you think that having a daily routine is
(A) a comfortable way of getting things done
(B) painful even when necessary

50. Are you naturally
(A) a "good mixer"
(B) rather quiet and reserved in company

51. In your early childhood (at six or eight), did you
(A) feel your parents were very wise people who should be obeyed
(B) find their authority irksome and escape it when possible

52. When you have a suggestion that ought to be made at a meeting, do you
(A) stand up and make it as a matter of course
(B) hesitate to do so

53. Do you get more annoyed at
(A) fancy theories
(B) people who don't like theories

54. When helping in a group undertaking, are you more often struck by
(A) the inspiring quality of shoulder to shoulder cooperation
(B) the annoying inefficiency of loosely organized group work
(C) or don't you get involved in group undertakings

55. When you go somewhere for the day, would you rather
(A) plan what you will do and when
(B) just go

GO ON TO THE NEXT PAGE

56. Are the things you worry about
(A) often really not worth it
(B) always more or less serious

57. In making an important decision on a given set of facts, do you
(A) find you can trust you feeling judgments
(B) need to set feeling aside and rely on analysis and cold logic

58. In the matter of friends, do you tend to seek
(A) deep friendship with a very few people
(B) broad friendship with many different people

59. Do you think your friends
(A) feel you are open to suggestions
(B) know better than to try to talk you out of anything you've decided to do

60. Does the idea of making a list of what you should get done over a week=end
(A) appeal to you
(B) leave you cold
(C) positively depress you

61. In traveling, would you rather go
(A) with a companion who had made the trip before and "knew the ropes"
(B) alone or with someone greener at it than yourself

62. Which of these two reasons for doing a thing sounds more attractive to you
(A) this is an opportunity that may lead to bigger things
(B) this is an experience that you are sure to enjoy

63. In your personal beliefs, do you
(A) cherish faith in things which cannot be proved
(B) believe only those things which can be proved

64. Would you rather
(A) support the established methods of doing good
(B) analyze what is still wrong and attack unsolved problems

65. Has it been your experience that you
(A) frequently fall in love with a notion or project which turns out to be a disappointment - so that you "go up like a rocket and come down like the stick"
(B) use enough judgment on your enthusiasms so that they do not let you down

66. Would you judge yourself to be
(A) more enthusiastic than the average person
(B) less excitable than the average person

GO ON TO THE NEXT PAGE

67. If you divided all the people you know into those you like, those you dislike, and those toward whom you feel indifferent, would there be more of
(A) those you like
(B) those you dislike

68. In your daily work, do you (for this item only if two are true mark both)
(A) rather enjoy an emergency that makes you work against time
(B) hate to work under pressure
(C) usually plan your work so you won't need to

69. Are you more likely to speak up in
(A) praise
(B) blame

70. Is it higher praise to call someone
(A) a man of vision
(B) a man of common sense

71. When playing cards, do you enjoy most
(A) the sociability
(B) the excitement of winning
(C) the problem of getting the most out of each hand
(D) the risk of playing for stakes
(E) or don't you enjoy playing cards

GO ON TO PART II

PART II

Sample Question

167.	Are your interests (A) few and lasting (B) varied

Sample Answer Sheet

	A	B
167	☐	■

If your interests are varied, you would mark answer box "B" as it is marked on the sample above. If they are few and lasting you would mark "A."

WHICH WORD IN EACH PAIR APPEALS TO YOU MORE?

72.	(A)	firm-minded	warm-hearted	(B)
73.	(A)	imaginative	matter-of-fact	(B)
74.	(A)	systematic	spontaneous	(B)
75.	(A)	congenial	effective	(B)
76.	(A)	theory	certainty	(B)
77.	(A)	party	theater	(B)
78.	(A)	build	invent	(B)
79.	(A)	analyze	sympathize	(B)
80.	(A)	popular	intimate	(B)
81.	(A)	benefits	blessings	(B)
82.	(A)	casual	correct	(B)
83.	(A)	active	intellectual	(B)
84.	(A)	uncritical	critical	(B)
85.	(A)	scheduled	unplanned	(B)
86.	(A)	convincing	touching	(B)
87.	(A)	reserved	talkative	(B)
88.	(A)	statement	concept	(B)
89.	(A)	soft	hard	(B)
90.	(A)	production	design	(B)
91.	(A)	forgive	tolerate	(B)
92.	(A)	hearty	quiet	(B)
93.	(A)	who	what	(B)
94.	(A)	impulse	decision	(B)
95.	(A)	speak	write	(B)
96.	(A)	affection	tenderness	(B)
97.	(A)	punctual	leisurely	(B)
98.	(A)	sensible	fascinating	(B)
99.	(A)	changing	permanent	(B)
100.	(A)	determined	devoted	(B)
101.	(A)	system	zest	(B)
102.	(A)	facts	ideas	(B)
103.	(A)	compassion	foresight	(B)
104.	(A)	concrete	abstract	(B)
105.	(A)	justice	mercy	(B)
106.	(A)	calm	lively	(B)
107.	(A)	make	create	(B)

108.	(A)	wary	trustful	(B)
109.	(A)	orderly	easy-going	(B)
110.	(A)	approve	question	(B)
111.	(A)	gentle	firm	(B)
112.	(A)	foundation	spire	(B)
113.	(A)	quick	careful	(B)
114.	(A)	thinking	feeling	(B)
115.	(A)	theory	experience	(B)
116.	(A)	sociable	detached	(B)
117.	(A)	sign	symbol	(B)
118.	(A)	systematic	casual	(B)
119.	(A)	literal	figurative	(B)
120.	(A)	peacemaker	judge	(B)
121.	(A)	accept	alter	(B)
122.	(A)	agree	discuss	(B)
123.	(A)	executive	scholar	(B)

GO ON TO PART III

PART III

ANSWER THESE QUESTIONS USING THE DIRECTIONS FOR PART I, ON THE FRONT COVER

124. Do you find the more routine parts of your day
(A) restful
(B) boring

125. If you think you are not getting a square deal in a club or team to which you belong, is it better
(A) to shut up and take it
(B) to use the threat of resigning if necessary to get your rights

126. Can you
(A) talk easily to almost anyone for as long as you have to
(B) find a lot to say only to certain people or under certain conditions

127. When strangers notice you, does it
(A) make you uncomfortable
(B) not bother you at all

128. If you were a teacher, would you rather teach
(A) fact courses
(B) courses involving theory

129. In your crowd, are you usually
(A) one of the first to try a new thing
(B) one of the last to fall into line

130. In solving a difficult personal problem, do you
(A) tend to do more worrying than is useful in reaching a decision
(B) feel no more anxiety than the situation requires

131. If people seem to slight you, do you
(A) tell yourself they didn't mean anything by it
(B) distrust their good will and stay on guard with them thereafter

132. When there is a special job to be done, do you like
(A) to organize it carefully before you start
(B) to find out what is necessary as you go along

133. Do you think it is a worse fault

(A) to show too much warmth
(B) not to have warmth enough

GO ON TO THE NEXT PAGE

134. At a party, do you like
(A) to help get things going
(B) to let the others have fun in their own way

135. When a new opportunity comes up, do you
(A) decide about it fairly quickly
(B) sometimes miss out through taking too long to make up your mind

136. In managing your life, do you tend
(A) to undertake too much and get into a tight spot
(B) to hold yourself down to what you can comfortably swing

137. When you find yourself definitely in the wrong, would you rather
(A) admit you are wrong
(B) not admit it, though everyone knows it
(C) or don't you ever find yourself in the wrong

138. Can the new people you meet tell what you are interested in
(A) right away
(B) only after they really get to know you

139. In your home life, when you come to the end of some undertaking, are you
(A) clear as to what comes next and ready to tackle it
(B) glad to relax until the next inspiration hits you

140. Do you think it more important to be able
(A) to see the possibilities in a situation
(B) to adjust to the facts as they are

141. Would you say that the people you know personally owe their successes more to
(A) ability and hard work
(B) luck
(C) bluff, pull, and shoving themselves ahead of others

142. In getting a job done, do you depend on
(A) starting early, so as to finish with time to spare
(B) the extra speed you develop at the last minute

143. After associating with superstitious people, have you
(A) found yourself slightly affected by their superstitions
(B) remained entirely unaffected

144. When you don't agree with what has just been said, do you usually
(A) let it go
(B) put up an argument

145. Would you rather be considered
(A) a practical person
(B) an ingenious person

GO ON TO THE NEXT PAGE

146. Out of all the good resolutions you may have made, are there
(A) some you have kept to this day
(B) none that have really lasted

147. Would you rather work under someone who is
(A) always kind
(B) always fair

148. In a large group, do you more often
(A) introduce others
(B) get introduced

149. Would you rather have as a friend someone who
(A) is always coming up with new ideas
(B) has both feet on the ground

150. When you have to do business with strangers do you feel
(A) confident and at ease
(B) a little fussed or afraid that they won't want to bother with you

151. When it is settled well in advance that you will do a certain thing at a certain time, do you find it
(A) nice to be able to plan accordingly
(B) a little unpleasant to be tied down

152. Do you feel that sarcasm
(A) should never be used where it can hurt people's feelings
(B) is too effective a form of speech to be discarded for such a reason

153. When you think of some little thing you should do or buy, do you
(A) often forget it until much later
(B) usually get it down on paper before it escapes you
(C) always carry through on it without reminders

154. Do you more often let
(A) your heart rule your head
(B) your head rule your heart

155. In listening to a new idea, are you more anxious to
(A) find out all about it
(B) judge whether it is right or wrong

156. Are you oppressed by
(A) many different worries
(B) comparatively few

157. When you don't approve of the way a friend is acting, do you
(A) wait and see what happens
(B) do or say something about it

GO ON TO THE NEXT PAGE

158. Do you think it is a worse fault to be
(A) unsympathetic
(B) unreasonable

159. When a new situation comes up which conflicts with your plans, do you try first
(A) to change your plans
(B) to change the situation

160. Do you think the people close to you know how you feel
(A) about most things
(B) only when you have had some special reason to tell them

161. When you have a serious choice to make, do you
(A) almost always come to a clear-cut decision
(B) sometimes find it so hard to decide that you do not wholeheartedly follow up either choice

162. On most matters, do you
(A) have a pretty definite opinion
(B) like to keep an open mind

163. As you get to know a person better, do you more often find
(A) that he lets you down or disappoints you in some way
(B) that, taken all in all, he improves upon acquaintance

164. When the truth would not be polite, are you more likely to tell
(A) a polite lie
(B) the impolite truth

165. In your scheme of living, do you prefer to be
(A) original
(B) conventional

166. Would you have liked to argue the meaning of
(A) a lot of these questions
(B) only a few

END OF TEST

250

PRINT NAME _____ (LAST) (FIRST) (MIDDLE)

SEX _____ (M OR F) TODAY'S DATE _____ BIRTHDATE _____

AGE _____ UNIT _____ (ORGANIZATION OR SCHOOL GIVING YOU THIS TEST)

OCCUPATION _____ IF NOW IN COLLEGE PUT CLASS (SR., JR., ETC.) AND MAJOR IF NOW IN SCHOOL PUT GRADE AND COURSE (ACADEMIC, BUSINESS, ETC.)

E ⟷ I
S ⟷ N
T ⟷ F
J ⟷ P
MAX 30 20 10 0 10 20 30 MAX

C	I			A
S	N			B
T	F			C
J	P			D
TYPE		TOTAL		

Myers-Briggs Type Indicator—Form F

Make your marks HEAVY and BLACK.

Erase stray marks completely.

1	A	B		25	A	B		49	A	B		72	A	B	85	A	B	98	A	B	111	A	B	124	A	B		148	A	B	
2	A	B		26	A	B		50	A	B														125	A	B		149	A	B	
3	A	B		27	A	B		51	A	B														126	A	B		150	A	B	
4	A	B		28	A	B		52	A	B		73	A	B	86	A	B	99	A	B	112	A	B	127	A	B		151	A	B	
5	A	B		29	A	B		53	A	B														128	A	B		152	A	B	
6	A	B		30	A	B		54	A	B	C													129	A	B		153	A	B	
7	A	B		31	A	B	C	55	A	B		74	A	B	87	A	B	100	A	B	113	A	B	130	A	B				C	
8	A	B		32	A	B		56	A	B														131	A	B		154	A	B	
9	A	B	C	33	A	B		57	A	B		75	A	B	88	A	B	101	A	B	114	A	B	132	A	B		155	A	B	
10	A	B		34	A	B		58	A	B		76	A	B	89	A	B	102	A	B	115	A	B	133	A	B		156	A	B	
11	A	B		35	A	B		59	A	B														134	A	B		157	A	B	
12	A	B		36	A	B		60	A	B	C	77	A	B	90	A	B	103	A	B	116	A	B	135	A	B		158	A	B	
13	A	B		37	A	B		61	A	B														136	A	B		159	A	B	
14	A	B	C	38	A	B		62	A	B		78	A	B	91	A	B	104	A	B	117	A	B	137	A	B	C	160	A	B	
15	A	B		39	A	B		63	A	B		79	A	B	92	A	B	105	A	B	118	A	B	138	A	B		161	A	B	
16	A	B		40	A	B	C	64	A	B														139	A	B		162	A	B	
17	A	B		41	A	B		65	A	B		80	A	B	93	A	B	106	A	B	119	A	B	140	A	B		163	A	B	
18	A	B		42	A	B		66	A	B														141	A	B	C	164	A	B	
19	A	B		43	A	B		67	A	B		81	A	B	94	A	B	107	A	B	120	A	B	142	A	B		165	A	B	
20	A	B		44	A	B		68	A	B	C	82	A	B	95	A	B	108	A	B	121	A	B	143	A	B		166	A	B	
21	A	B		45	A	B		69	A	B														144	A	B					
22	A	B		46	A	B		70	A	B		83	A	B	96	A	B	109	A	B	122	A	B	145	A	B					
23	A	B		47	A	B	C	71	A	B	C													146	A	B					
24	A	B		48	A	B				D	E	84	A	B	97	A	B	110	A	B	123	A	B	147	A	B					

© 1944, 1958 BY KATHARINE C. BRIGGS & ISABEL B. MYERS

PRINTED IN U.S.A.

80781FORM

APPENDIX G

Data for Rater Reliability

APPENDIX G

Data For Rater Reliability

Rater	Tape #	Literal	Reorganization	TOTAL LOW	Inference	Evaluation	Appreciation	TOTAL HIGH	TOTAL HIGH & LOW	RANK	TOTAL VALUES
A	1	5	3	8	2	1	1	4	12	4	0
	2	10	0	10	1	1	0	2	12	4	0
	3	9	2	11	2	1	3	6	17	8	1
	4	12	3	15	2	0	1	3	18	10	0
	5	8	2	10	1	3	2	6	16	6	2
	6	9	0	9	2	1	0	3	12	4	0
	7	9	5	14	1	0	2	3	17	8	0
	8	4	3	7	2	1	0	3	10	1	1
	9	10	3	13	3	0	1	4	17	8	0
	10	8	1	9	0	0	2	2	11	2	1
B	1	6	3	9	2	0	1	3	12	4.5	0
	2	10	1	11	1	0	0	1	12	4.5	0
	3	10	2	12	1	1	2	4	16	7	1
	4	13	3	16	1	0	1	2	18	9.5	0
	5	8	2	10	2	2	1	5	15	6	1
	6	9	0	9	2	0	0	2	11	2.5	0
	7	10	5	15	1	0	2	3	18	9.5	0
	8	4	3	7	1	2	0	3	10	1	1
	9	11	13	14	2	0	1	3	17	8	0
	10	9	0	9	0	2	0	2	11	2.5	1

APPENDIX G

Data For Rater Reliability

Rater	Tape #	Literal	Reorganization	TOTAL LOW	Inference	Evaluation	Appreciation	TOTAL HIGH	TOTAL HIGH & LOW	RANK	TOTAL VALUES
C	1	5	3	8	2	1	1	4	12	3.5	0
	2	9	1	10	1	1	0	2	12	3.5	1
	3	8	3	11	3	1	2	6	17	8.5	1
	4	12	3	15	2	1	1	4	19	10	0
	5	9	2	11	2	2	1	5	16	6.5	1
	6	9	0	9	3	0	0	3	12	3.5	0
	7	9	5	14	1	0	2	3	17	8.5	0
	8	3	3	6	2	1	0	3	9	1	1
	9	10	3	13	3	0	0	3	16	6.5	0
	10	8	1	9	1	1	1	3	12	3.5	1
T	1	5	3	8	1	1	1	3	11	2	0
	2	9	1	10	2	0	0	2	12	3.5	0
	3	10	3	13	2	1	2	5	18	10	1
	4	13	2	15	2	0	0	2	17	8.5	0
	5	8	3	11	0	3	1	4	15	6	2
	6	9	1	10	2	0	1	3	13	5	0
	7	8	6	14	1	0	1	2	16	7	0
	8	3	3	6	2	1	0	3	9	1	0
	9	10	3	13	3	0	1	4	17	8.5	0
	10	10	0	10	0	1	1	2	12	3.5	1

APPENDIX H

Data Collected for Sample Groups

WORKSHOP APPROACH A - BIOGRAPHICAL DATA

Code Name	Age	Experience	Social Origin	Heslin - Blake				Myers - Briggs				
				Affective	Behavioral	Cognitive	TOTAL	Extravert - Introvert	Sensing - Intuition	Thinking - Feeling	Judgment - Perception	TYPE
Alabama	30	6	M	94	55	69	218	E25	N31	F49	P03	ENFP
Michigan	59	20	M	90	79	63	232	I25	S47	F43	J31	ISFJ
New Hampshire	24	4	M	120	92	99	311	E45	N23	T17	J19	ENTJ
Texas	31	7	M	84	94	77	255	I21	S41	F11	J11	ISFJ
Wyoming	56	17	LM	74	85	61	220	I29	N07	F43	P15	INFP
Massachusetts	41	10	UM	89	95	81	265	E11	S05	T15	J27	ESTJ
Arkansas	30	7	LM	114	95	80	289	E19	S31	T09	J29	ESTJ
Louisiana	49	20	UM	98	99	95	292	E11	N27	T21	J01	ENTJ
Missouri	32	8	LM	104	99	73	276	E23	S31	T29	P11	ESTP
Rhode Island	54	26	LM	103	58	59	220	E17	S17	F49	J11	ESFJ

WORKSHOP APPROACH B - BIOGRAPHICAL DATA

Code Name	Age	Experience	Social Origin	Heslin - Blake				Myers - Briggs				
				Affective	Behavioral	Cognitive	TOTAL	Extravert - Introvert	Sensing - Intuition	Thinking - Feeling	Judgment - Perception	TYPE
Florida	51	30	LM	75	106	104	285	E17	N27	F31	P31	ENFP
Utah	26	3	LM	91	92	81	264	E23	N23	T11	J21	ENTJ
Nevada	25	2	LM	89	84	77	250	E15	N17	F17	J27	ENFJ
Ohio	63	38	M	104	57	56	217	E07	S59	T09	J33	ESTJ
Tennessee	33	10	M	118	91	64	273	I05	S39	T33	J37	ISTJ
Arizona	26	3	M	108	84	71	263	E37	N37	F45	P51	ENFP
New Mexico	26	4	M	105	93	80	278	E47	N31	F05	J11	ENFJ
Vermont	30	8	M	117	88	75	280	I27	N07	F03	P33	INFP
Wisconsin	37	8	UL	98	104	81	283	I09	S23	F21	J53	ISFJ
Nebraska	40	14	M	110	83	92	285	E11	N35	F03	P27	ENFP

WORKSHOP APPROACH C - BIOGRAPHICAL DATA

Code Name	Age	Experience	Social Origin	Heslin - Blake				Myers - Briggs				
				Affective	Behavioral	Cognitive	TOTAL	Extravert - Introvert	Sensing - Intuition	Thinking - Feeling	Judgment - Perception	TYPE
Idaho	28	6	LM	116	88	102	306	E27	N37	F39	P55	ENFP
Maine	36	13	LM	93	87	72	252	I05	S59	F35	J37	ISFJ
Montana	56	28	M	118	90	97	305	E39	N39	F19	J33	ENFJ
North Carolina	28	6	M	110	111	83	304	E37	N45	T09	P03	ENTP
South Carolina	42	16	LM	125	99	84	308	E35	N19	F27	J09	ENFJ
Puerto Rico	31	7	M	95	56	70	221	E27	N33	F33	P05	ENFP
Poland	46	25	M	70	101	99	270	E13	N22	F25	P25	ENFP
Yugoslavia	35	12	L	120	93	66	279	I07	S41	T35	J37	ISTJ
Germany	26	4	L	108	101	97	306	E21	N45	F13	P05	ENFP
Ireland	28	5	LM	89	90	79	258	I19	N23	T11	P11	INTP

WORKSHOP APPROACH A - QUESTIONS

	Low			High			Values			Total # Questions		
Code Name	Pre	Post	Diff	Pre	Post	Diff	Pre	Post	Diff	Pre	Post	Diff
Alabama	29	35	+ 6	12	19	+ 7	1	2	+ 1	42	56	+14
Michigan	37	37	0	16	22	+ 6	3	4	+ 1	56	63	+ 7
New Hampshire	43	20	-23	8	14	+ 6	3	2	- 1	54	36	-18
Texas	37	33	- 4	0	2	+ 2	0	4	+ 4	37	39	+ 2
Wyoming	4	7	+ 3	19	15	- 4	0	0	0	23	22	- 1
Massachusetts	38	6	-22	16	24	+ 8	2	2	0	56	32	-24
Arkansas	75	67	- 8	9	7	- 2	0	0	0	84	74	-10
Louisiana	38	28	-10	0	3	+ 3	1	3	+ 2	39	34	- 5
Missouri	8	8	0	12	14	+ 2	0	1	+ 1	20	23	+ 3
Rhode Island	89	51	-38	15	21	+ 6	2	2	0	106	74	-32

WORKSHOP APPROACH B - QUESTIONS

	Low			High			Values			Total # Questions		
Code Name	Pre	Post	Diff	Pre	Post	Diff	Pre	Post	Diff	Pre	Post	Diff
Florida	7	9	+ 2	6	13	+ 7	1	6	+ 5	14	25	+14
Utah	51	34	-17	9	15	+ 6	0	0	0	60	49	-11
Nevada	68	18	-50	23	43	+20	3	7	+ 4	94	68	-26
Ohio	24	9	-13	9	16	+ 7	0	2	+ 2	33	27	- 6
Tennessee	39	25	-14	5	8	+ 3	0	4	+ 4	44	37	- 7
Arizona	27	7	-20	10	18	+ 8	1	1	0	38	26	-12
New Mexico	47	21	-26	16	21	+ 5	1	3	+ 2	64	45	-19
Vermont	23	31	+ 8	15	12	- 3	0	3	+ 3	38	46	+ 8
Wisconsin	66	30	-36	23	33	+10	0	2	+ 2	89	65	-24
Nebraska	5	5	0	10	23	+13	1	4	+ 3	16	32	+16

WORKSHOP APPROACH C - QUESTIONS

Code Name	Low			High			Values			Total # Questions		
	Pre	Post	Diff	Pre	Post	Diff	Pre	Post	Diff	Pre	Post	Diff
Idaho	26	28	+ 2	29	31	+ 2	3	1	- 2	58	62	+ 4
Maine	58	35	-23	4	6	+ 2	0	0	0	62	41	-21
Montana	20	22	+ 2	19	18	- 1	1	0	- 1	40	40	0
South Carolina	20	7	-13	27	7	-20	3	4	+ 1	47	18	-29
North Carolina	32	14	-18	38	20	-18	6	10	+ 4	76	44	-32
Puerto Rico	31	47	+16	16	18	+ 2	1	0	- 1	48	65	+27
Poland	57	47	-10	0	10	+10	0	1	+ 1	57	58	+ 1
Yugoslavia	75	62	-13	18	22	+ 4	0	0	0	93	84	- 9
Germany	5	4	- 1	0	2	+ 2	0	0	0	5	6	+ 1
Ireland	40	23	-17	10	14	+ 4	1	2	+ 1	51	39	-12

APPROVAL SHEET

The dissertation submitted by Sydell Weiss has been read and approved by the following committee:

Dr. M. Constantine, Chairman
Associate Professor, Education, Loyola

Dr. M.J. Gray
Associate Professor, Education, Loyola

Dr. G. Trotter
Assistant Professor, Education, Loyola

The final copies have been examined by the director of the dissertation and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the dissertation is now given final approval with reference to content and form.

The dissertation is therefore accepted in partial fulfillment of the requirements for the degree of Doctor of Education.

May 23, 1974
Date

Sister Mary Constantine, S.S.J.
Director's Signature